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ABSTRACT

The report presents findings of a 3-year investigation of a language intervention program for young children (3-6 years old) with serious language disabilities. The model features a communication game approach to teach linguistic elements through stress on meaningful conversation. An initial chapter describes project aims and accomplishments and discusses its theoretical underpinnings. Chapter 2 describes the intervention program in greater detail, with consideration of the rationale and procedures involved in the communication game approach, the model's three levels of increasing complexity, and examples of game formats used. An evaluation chapter first addresses methodological options and then describes sample selection procedures for the field testing. Following a review of data collection procedures, chapter 5 presents results in terms of background variables and analysis of spontaneous speech samples. Case studies illustrate the communication game approach. Concluding chapters address practitioner training needs, provide observations and suggestions regarding program implementation, and summarize conclusions and recommendations. Appended materials includes forms and a parents' guide to communication games. (CL)

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Volume I

Final Report: Grant No. G007904630

A Language-Training Curriculum for Severely Language-Delayed Preschool and Primary-Grade Children

Susan Conant and Milton Budoff

EC 161825

Final Report:

A Language Training Curriculum for Severely Language-Delayed Preschool and Primary-Grade Children

Grant No. G007904630

VOLUME I

PROJECT EVALUATION, OVERVIEW, AND ACTIVITIES

Susan Conant and Milton Budoff

Research Institute for Educational Problems
Cambridge, Massachusetts

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Field-Initiated Studies

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SUMMARY

The aims of this three-year project were: to develop a language intervention program for young children with serious language disabilities; to evaluate the intervention; to investigate its practical usefulness in the field; and to produce a marketable product.

Intervention Program

The language intervention program developed in this project is placed in the context of traditional speech therapy, operant, and conversational-nondidactic paradigms of language intervention. While closest in philosophy to other communicative or conversational approaches, this didactic intervention allows practitioners to engage in genuinely conversational remediation without abandoning the structure of the more traditional paradigms.

The communication games that make up the program intensify certain characteristics of ordinary conversation. Linguistic elements can be taught explicitly in the games if and only if those elements can be used to differentiate between concrete alternatives, that is, if they can be used to make definite reference to one thing rather than to another. Markers of pragmatic rather than referential or propositional meaning are taught implicitly by modeling and by creating situations that favor the use of these elements.

The program is divided into three levels of complexity, and a variety of game formats are available for teaching the comprehension and production of a variety of linguistic content.

Evaluation

The target population for the intervention consisted of young children with serious language disabilities. Children eligible for the sample were between 3 and 8 years of age; attended school; were selected on the basis of language functioning, not diagnosis, except that classically autistic children were excluded; had I.E.P.'s calling for language remediation; did not have disabilities that would interfere with the implementation of the intervention (e.g., had normal hearing and vision); and presented a clinical picture of serious language disability (e.g., target MLU between 1.0 and 2.0). All children in available schools meeting the criteria were selected, and parents of all gave informed consent for participation.

Background data were collected from school records and personnel on children's ages, diagnoses, families, and certain behavioral characteristics. Interrater agreement for the background variables involving judgments was examined by having two senior staff members independently rate the 24 children whom both knew well. Kappa (for categorical variables) and weighted Kappa (for scaled responses) showed acceptable agreement for most.

Spontaneous speech samples were tape-recorded, transcribed, and coded for a variety of variables reflecting amounts of speech, syntax, and speech acts. Interrater agreement for independent codings of 25 randomly selected transcripts by two coders was acceptable for all amount of speech and speech act variables. The coding of syntax was performed by a specialist coder; intrarater reliability was assessed in separate codings of 25 randomly selected transcripts. Acceptable agreement was demonstrated.

Data were reduced by constructing from the simple variables four composites: an amount of speech composite, a "long unit" composite, a syntax composite, and a speech act composite.

Data from spontaneous speech samples collected before and after a four-month interval from 26 children receiving the intervention and 26 contrast group children are presented. The groups were similar in most background characteristics; the group receiving the intervention contained more physically aggressive children, more from neglectful or abusive homes, and fewer from enriched or attentive homes than did the contrast group. Preliminary analyses identified cognitive level as an important factor to be taken into account in subsequent analyses.

Results. Univariate two-way (treatment by cognitive level) analyses of covariance were conducted for each of the four composite variables, with the posttest score as dependent variable and the corresponding pretest score as the covariate. Within the higher cognitive level group (no and moderate cognitive delay), treatment was significant for the amount of speech, long unit and speech acts composites, and fell just short of significance for the syntax composite.

A multivariate two-way (treatment by cognitive level) analysis of covariance with the four posttest composites as dependent variables and the four pretest composites as covariates showed that treatment was significant for the children with no and moderate cognitive delay but not for the very seriously delayed children. Overall, the intervention emerges as effective for the children in the higher cognitive level group but not for the others. In interpreting the results, it is important to recall that level refers to apparent cognitive functioning, not to language; all children had serious language delays and disabilities.

A case presentation illustrates the use of the intervention program developed in this project. The child whose case is presented, a 5-year-old girl born with an encephalocele, showed a marked delay in the development of expressive language. Results obtained from spontaneous speech samples collected in intervention settings and in naturalistic settings pre- and post-intervention show gains in the amount the child talked and in syntactic and pragmatic aspects of her language. A one year follow-up suggests that she had continued to make gains in the amount spoken but not in other areas.

The case of a 5-year-old boy with an unexplained but serious language delay highlights the contrast between traditional and conversational or communicative approaches to language intervention. This case also illustrates several aspects of the individualization of this intervention program.

The third detailed case is that of a child who made spontaneous, dramatic, clinically obvious progress in expressive language from one observation to the next. An examination of the transcripts of speech samples collected at the two times shows that these samples did, in fact, reflect the impoverishment of the child's expressive language at the first observation and the marked improvement at the second. An examination of numerous quantitative measures derived from the samples shows that the measures (both simple and composite) of amount of speech, length of units, and syntax captured the progress evident elsewhere, but that the measures of speech acts failed to capture the progress in pragmatics.

Implementation and Practical Usefulness

The training of 21 practitioners in the use of the program provided feedback about the program itself and information about training materials and procedures.

Feedback about the games was very positive. Feedback from participating trainees led to changes in the book produced by the project. Participants contributed ideas included therein, and staff observations of trainees' difficulties in using the games led to new sections of the manual.

Active, hands-on experiences were particularly helpful training procedures. A series of training exercises were developed, exercises in which participants simulate language disabilities and learn to avoid adult interventions that interfere with conversational interchange.

Observations of schools at which the intervention program was developed show that the program is a flexible one, adaptable to a variety of contexts. Impediments to implementing the intervention included those related to physical space: the availability of space and the noise level in the school. Staff resistance was both specific to the intervention and general: Resistance to the intervention was related to an overconcern with and negative approach to obedience and control; and to traditional training. General resistance was encountered when practitioners felt barraged by too many experts overwhelmed by the demands already placed on them.

Suggestions for introducing the program include: flexibility in adapting to different contexts; demonstrations of materials and games; a willingness to share the program with all interested staff;

the recognition of general resistance; and a low-key approach.

Recommendations

With regard to the evaluation, the group-comparison and single-case approaches both had assets and weaknesses. Recommendations for future evaluation of this program are for the extremes: large-scale randomized studies and/or intensive single cases with data collected at frequent intervals. With regard to the current controversy over the meaningfulness and usefulness of quantitative measures of child language, the project's efforts to quantify the children's expressive language were largely satisfactory. Recommendations are for methodological studies concerned with speech-sample data from this population.

Because the language intervention program emerges as highly flexible, it could be adapted for use with other populations, including hearing-impaired and/or signing populations and developmentally delayed adolescents. Training parents to implement the program is an obvious next step.

Observations of practitioners making the transition from traditional to conversational or communicative language intervention, as well as observations of the clinical work of project staff, suggest that the role relationship between clinician and child is a key characteristic of this approach. The change in role relationship accompanying the transition from traditional work to work based on pragmatics highlights interpersonal phenomena important in clinical practice. Observations of processes reminiscent of resistance, countertransference, and induction in psychotherapy suggest that clinical language intervention has more in common with clinical psychology than the literature in the field of language intervention would suggest. Interpersonal processes involving clinician and child, as well as parent and language-disabled child, are a fruitful topic for future research.

PREFACE

This report appears in two volumes. This first volume reports on project aims, activities, and accomplishments, while the second is the product produced in the project, the manuscript of a book to be published by The Ware Press, Cambridge, Massachusetts. While the first and second chapters of this volume contain some material about the language intervention program developed in this project, the actual how-to-do-it details of the intervention are described in detail in the second volume.

ACKNOWLEDGEMENTS

In additon to the many children, practitioners, project staff, and others whose contributions to this project are acknowledged in the second volume of this report, we particularly want to note the contribution of Barbara Hecht. Together with Robert Morse, she provided the original inspiration for this project and its central ideas.

Many thanks to Patrick O'Neill for his work on this manuscript.

Susan Conant and Milton Budoff

CHAPTER ONE

PROJECT AIMS AND OVERVIEW

The aim of the project described in this report was to develop and evaluate a communicative language intervention program for young children with serious language delays and disabilities. Its specific aims were as follows:

1. To develop a language intervention program consisting of a series of communication games for helping seriously language-delayed and language-impaired children to learn language in the context of meaningful use.

2. To evaluate the impact of the intervention program on the spontaneous speech of the children by:

   a. comparing groups of children receiving and not receiving the program;

   b. analyzing single cases in a clinically meaningful way.

3. To investigate the practical usefulness of the intervention program in field settings by training practitioners (teachers, speech and language pathologists) in the use of the program.

4. To produce a marketable product in order to disseminate the results of the project.

Summary of Project Activities

The development of the language intervention program began in Year 1. Project staff, in providing direct service to a small group of subjects, developed a series of games at different levels of difficulty. In Year 2, staff provided direct service to a larger group of subjects, developed more games, and produced a draft of a manual on the use of the program. In Year 3, teachers, speech and language pathologists, and other practitoners were trained to use the program. Practitioners participating in the project contributed new games, variations on games, and other material.

Data to be used in evaluating the impact of the intervention on subjects' spontaneous speech were collected throughout the project. Spontaneous speech samples were obtained from participating children at four-month intervals. Language intervention sessions were tape-recorded for use in case studies.

The evaluation of the practical usefulness of the program in classroom settings was based on Year 3 activities. Practitioners were trained in the use of the program. They used the manual and games developed in previous project years, participated in a series of training workshops, and received field supervision.

In Year 2 of the project, a draft of the manual and a description of the game materials were submitted to LINC Resources, Inc., and in Year 3, arrangements were made for the publication of the manual in book form by The Ware Press, Cambridge, Massachusetts. Project staff also produced several papers pertaining to the program (e.g., Conant & Budoff, in press) and conducted workshops at professional conferences (e.g., Conant, Cuneo, & Budoff, 1981). The manual for the language intervention program appears as Volume II of this report.

Project Accomplishments in Context

The next chapter of this report provides an overview of the language intervention procedures developed in this project. In this section, we place the project in the context of contemporary early childhood language intervention by discussing briefly one issue of somewhat heated controversy in the field: the issue of the efficacy of traditional versus what are called "conversational," "nondidactic," or "unstructured" approaches. It is not the purpose of this brief discussion to provide a history of language intervention procedures, nor is it our intention to present and analyze the current state of the science. Schiefelbusch (1978) provides a recent, comprehensive, and succinct statement of contemporary approaches to language intervention. Other papers appearing in the volume edited by Schiefelbusch (1978) are also illustrative. In addition, two special issues of journals are useful as statements of contemporary issues in the field: an issue of New Directions for Exceptional Children edited by Bricker (1980) and an issue of Topics in Language Disorders edited by Geffner (1981) that focuses on language assessment but also touches on intervention issues.

Intervention Paradigms

The field of childhood language intervention may be understood as a competition among three paradigms of what should go on between therapist and child.

The "speech therapy" paradigm. The first of these paradigms is what we shall call the traditional "speech therapy" paradigm. The model underlying this approach is essentially a medical one. In this paradigm, a language disability is a condition to be diagnosed and treated with a prescribed therapeutic remedy. The context for intervention in this paradigm is highly structured and, perhaps not incidentally, it is the context of one-to-one individual therapy. The prominent procedures, strategies, and techniques in this paradigm are those that dominated the field until the advent of behavior modification procedures. Specifically, the therapist relies heavily on exhortion: The therapist exhorts the child to imitate the therapist's model of sample sounds, words, phrases, or sentences. A second change mechanism in the traditional paradigm is conscious awareness: Learning to become aware of one's omissions of articles, misarticulations, and so forth is believed to help one correct these errors. Third, practice, including language drills, is notable.

With regard to articulation, a notable feature of the paradigm is the inclusion of procedures for helping the child to change not only the product he or she produces, but also the process of production. For example, traditional intervention within this paradigm pays a good deal of attention to procedures for showing the child how to arrange his lips and tongue in order to produce different sounds.

If one were forced to select a typical content for this paradigm, the content would be articulation, but intervention directed at semantic, syntactic, and pragmatic features of language also follows a medical model, emphasizes diagnosis, takes place in a structured one-to-one context, and relies on exhortation, awareness, and practice as the mechanisms of therapeutic change.

The operant paradigm. The second paradigm is that of behavior modification. The model underlying this paradigm, operant conditioning, is fully spelled out in Skinner's *Verbal Behavior* (1957).

In its original and most pure form, the language intervention paradigm based on operant principles, like the traditional speech therapy paradigm, uses a highly structured one-to-one context.

Probably the most salient difference between these two paradigms is the difference in the procedures used for effecting change. In behavior modification, in fact, the mechanism of change is the major emphasis of the paradigm: reinforcement. Rather than focusing on what happens before the child utters something or on tactics for helping to prepare him to utter something, this paradigm focuses on what the therapist does as soon as the words leave the child's mouth. As in the traditional paradigm, the procedure is repeated many times.

Because of the emphasis on what the therapist does rather than on other potentially important parts of the paradigm, the content taught in this paradigm is a comparatively incidental feature. In practice, the rise of interest in this paradigm coincided with the rise of transformational-generative grammar. Intervention procedures developed in the 1960s frequently combined the procedures of behavior modification with the content and goals of transformation-generative grammar, although the assumptions underlying behavior modification and those underlying transformational-generative grammar are in radical opposition to one another (see Chomsky, 1957, 1959).

The nondidactic conversational paradigm. The third paradigm is what we shall call the nondidactic conversational paradigm. Historically, this approach arose partly in response to a specific dissatisfaction with behavior modification. That dissatisaction, a prominent theme in discussions of language intervention in the early 1970s, was the problem of generalization. Briefly, while practitioners of the behavior modification approach were happy with the results they obtained within the clinical setting, they were dissatisfied with the performance of their population in real world situations.

A sensible solution to this problem of lack of generalization was to change the context of intervention, that is, to train children in the natural situations in which they needed to use language. The mechanism of change remained operant, but the context changed. Ultimately, this apparently minor change had a pervasive influence on practice. The landmark in this shift, the key transitional publication, is Hart and Risley's (1975) description of incidental teaching. What the Hart and Risley paper marks is the change not only from the traditional one-to-one context, but the change from a structured didactic context to a conversational context. The significance of the paper lies in the implication that language intervention should consist of interchanges between therapist and child in naturally occurring, real-life situations; it should not involve structured, one-to-one therapy. It should not be didactic.

The emergence of the nondidactic conversational paradigm was tied to shifts within research on language acquisition. Studies of child language moved from a focus on the intrapsychic processes whereby children acquire grammar (e.g., Brown, 1973) to the interpersonal processes whereby they acquire the ability to put language to work in communication (e.g., Bruner, 1974/5; Bruner & Sherwood, 1976; Cook-Gumperz, 1979). That shift, in turn, was part of the general transition from interest in the "pure" aspects of syntax (e.g., Chomsky, 1957) to interest in pragmatic aspects of language.

The nondidactic conversational paradigm dictates that the therapist create communicative exchanges. These are the main change mechanisms and include tactics for helping the child to do his part in the conversation. For example, the therapist creates conversational openings, avoids terminating conversational sequences, and reframes the child's talk as a valid conversational contribution. The context of this interaction is unstructured, and one-to-one individual therapy is replaced by a milieu setting, especially the family or the classroom. The typical content in this paradigm is language function rather than structure, hence the therapist values and attends to nonverbal as well as to verbal communication. The meaning the child intends to convey is of great interest and importance in this paradigm.

Didactic conversation. The approach developed in this project has areas of commonality with all three of these paradigms, although in philosophy it is closest to the nondidactic conversational paradigm. As in that paradigm, the model of what should go on between therapist and child is an interpersonal, nonmedical one of conversational exchanges. Similarly, the tactics the therapist uses in these exchanges are identical to the conversational ones of the third model: The therapist creates opportunities for communication, creates openings, avoids terminating sequences, and otherwise imposes a conversational structure on exchanges. In contrast, however, our approach is a structured one. The therapist and child engage in specific game activities, and in the course of playing the games, opportunities for repeated practice occur. As in the operant paradigm, the content of the game activities is of less concern than the method; like operant conditioning, this approach may be used to focus on many different kinds of linguistic content. In contrast to operant approaches, however, the aim of the therapist is never simply to have the child produce an utterance; rather, the aim, as in the conversational nondidactic paradigm, is to have the child use words in meaningful ways in actual interpersonal exchanges. In short, if we were forced to put a tag on this approach, it might be called a conversational didactic one.

Practical Considerations

The preceding sketch of approaches to language intervention is of more than historical or theoretical interest. These paradigms, while interesting to consider as contrasting theoretical models, translate into very different clinical and classroom practices.

The underlying paradigm affects many aspects of the teacher's and language pathologist's work and, particularly, the nature of their relationship. In the classic traditional speech therapy paradigm, the speech therapist removes the child from the classroom to provide individual treatment; the classroom teacher's role is to provide general language stimulation and otherwise to support rather than actually to execute the intervention. In the classic operant paradigm, the therapist works individually with the child in a clinical setting but, if all goes well, the therapist enlists the teacher (and parents) as actual providers of treatment.

In somewhat attenuated form, these paradigms emerge in the classroom in the form of a structured "language time," a scheduled period in the preschool day devoted to small and/or large group language intervention activities. One also observes these paradigms in action when teachers and therapists convey the valuing of language forms over language functions. In particular, the speech therapy tradition underlies the insistence upon proper articulation (whether or not misarticulation interferes with communication), and the old historical connection between the operant paradigm and interest in syntax underlies the insistence on fully formed sentences when single words or phrases are communicatively adequate. The adult request for exact limitations of model sounds, words, or sentences or for labelling flags the presence of one or the other of these paradigms, and the positive verbal reinforcement "Good talking!" is the classroom hallmark of the operant.

A hybrid classroom sometimes combines operant and nondidactic paradigms in incidental teaching, which is, in effect, an operant conversational approach; the general idea is to use the change mechanism of the operant paradigm to affect the behaviors valued in the conversational paradigm. In short, reward language function. Probably the best known example of this general kind of approach, apart from the classic Hart and Risley paper and their other work, is Rieke, Lynch, and Soltman's (1977). Individuals and institutions with roots in the operant paradigm who have shifted toward the conversational one seem, however, eventually to deemphasize the operant and to become more and more pure nondidactic conversationalists, so to speak. The work of James MacDonald and his colleagues at the Nisonger Center (MacDonald & Gillette, 1982) is a case of this kind of transition.

The hallmarks of the nondidactic conversational approach in the classroom include not only the absence of rote drills, language times, and other structured language activities, but also the presence of certain specifiable interactions among adults and children. If one were to pick a single adult speech act flagging this approach it would be a request that the child provide the adult with information that the adult does not already have. In place of the "What is this?" of the didactic paradigms, one hears, "What did you do after school yesterday?" or "Which one do you want?" or some other request for new information. Ideally the speech and language pathologist works together with the teacher, and the entire school day is language time: The adults create and take advantage of situations for helping the children to learn many different aspects of language. Teachers and therapists are not didactic; they are facilitative.

At this point, a problem arises. The word didactic means fitted or intended to teach. Teachers and language and speech pathologists are, intentionally, instructors. Their role has by tradition and definition been a didactic one. Furthermore, they are trained in a didactic tradition and one in which there is great value placed on assessing and remediating specific skills. Many teachers and therapists want to teach specific content in structured situations; otherwise, they feel they are not fulfilling their role. In addition, many question the effectiveness of unstructured intervention. The entire tradition of special education is one in which the instructor uses special, structured procedures. Special educators believe in the effectiveness of that approach, and they are consequently reluctant to abandon it.

Empirical evidence, then, might be the answer. If proponents of unstructured approaches were to provide overwhelming evidence of the superiority of that approach over didactic approaches, practitioners would eventually be convinced to shift their tactics. The paradigms, however, carry with them assumptions about assessment as well as the beliefs about intervention sketched above. Furthermore, since the short-term goals of the paradigms are not identical, proponents of different approaches are concerned with measuring different aspects of language. To make matters even worse, the main goals of the third paradigm have to do with pragmatics, and measuring pragmatic development is an area in its infancy. While various studies do suggest the effectiveness of different approaches, no overwhelming evidence is available to convince special education that it is responsible and safe to abandon structured teaching. Furthermore, too many practitioners have had personal experiences of success in teaching specific skills to individual children for any group comparison study results to be very convincing.

The approach to language intervention developed in this project addresses this practical problem of how to help practitioners engage in genuinely conversational remediation without abandoning the traditions and, perhaps, the efficacy of structured procedures. This approach allows the practitioner to retain the structured context and opportunity for repeated practice of the didactic paradigms. It also allows, with certain qualifications, considerable flexibility in the linguistic content that is taught. While this approach focuses on specifiable articulatory, semantic, and syntactic forms, it always teaches those forms in the context of meaningful use. That is, the approach is truly pragmatic in the sense that it combines the teaching of language forms and language functions.

Summary

The aims of this three-year project were: to develop a language intervention program for young children with serious language disabilities; to evaluate the intervention; to investigate its practical usefulness in the field; and to produce a marketable product. The intervention program, which consists of a series of communication games, was developed in Years 1 and 2. Evaluation based on measures derived from spontaneous speech samples was conducted throughout. The investigation of the practical usefulness of the program in field settings took place in Year 3; practitioners were trained in the program. A book describing the intervention program has been accepted for publication.

The language intervention program developed in this project is placed in the context of traditional speech therapy, operant, and conversational-nondidactic paradigms of language intervention. While closest in philosophy to other communicative or conversational approaches, this didactic intervention allows practitioners to engage in genuinely conversational remediation without abandoning the structure of the more traditional paradigms.

CHAPTER TWO

INTERVENTION PROGRAM

This chapter describes the background and content of the language intervention program developed by this project. A succinct summary of the program appears in Appendix A, and a detailed description of the intervention appears as Volume II of this report.

This chapter first describes the rationale for the development and use of a communicative approach to language intervention. It then describes the communicative method used in the program, the process of playing the communication games developed in this project, the characteristics of the program, the linguistic content taught in the games, the program levels, and the formats used in the games.

Rationale

Approaches to the remediation of serious language handicaps in young children have moved from an emphasis on intervention in the clinical setting implemented by specialists to an emphasis on intervention in the natural setting implemented by nonspecialist teachers and parents.

Systems approach. One source of this shift in emphasis is an increased understanding of language disabilities as ethological or systems problems rather than as exclusively individual problems of the disabled child. The classic statement of this ethological approach to delayed language acquisition is a paper by Mahoney (1975). According to Mahoney, "the major emphasis of the ethological approach is that the process of language acquisition is one which results from the synchronization of two behavioral systems, the communication system of the adult and the communication system of the child." (1975, p. 139). This new construal of language disabilities as interpersonal as well as intrapersonal problems has provided theoretical support for a shift in the locus of intervention from the individual child *in vacuuo* to the child in his or her social environment. A clear example of this kind of systems approach to language intervention is the Environmental Language Intervention Program developed by MacDonald and his colleagues (e.g., Horstmeier & MacDonald, 1978).

Generalization. A second source of the shift is the practical problem of achieving generalization of language skills from clinical to natural settings. Guess, Sailor, and Keogh, in reviewing language intervention programs and procedures, conclude that "of all the unsolved problems confronting those engaged in efforts to train communication skills..., the issue of generalization is certainly the most current and pressing" (n.d., pp. 114-115). As Guess, Sailor and Keogh discuss, this problem is shared alike by those approaching language intervention from disparate and conflicting theoretical orientations; the problem of generalization plagues the behaviorist and the cognitive psycholinguist alike. One response to the problem has been consonant with the ethological understanding of language disabilities: a shift from the training of language skills in clinical settings to training in the natural environment. Probably the most widely known examples of such environmentally based training are Hart and Risley's (1975) "incidental teaching" approach, the approach of Rieke, Lynch and Soltman (1977), and other "directive teaching" approaches (Allen, 1980).

Pragmatics. A third source of the shift in emphasis is the rise of interest in pragmatic aspects of language (e.g., Bates, 1976; Miller, 1978; Ochs & Schieffelin, 1979). The field of pragmatics has highlighted the need to help language-handicapped children to learn to use language forms as a means of serving communicative functions. While theories of syntax stress the forms of language, theories of pragmatics (e.g., Austin, 1962; Feldman, 1974; Grice, 1975; Searle, 1969) stress the appropriate and effective use of these forms in achieving interpersonal communication. In a communicative approach, communication serves as a means as well as an end. The teaching context provides a need to transmit information, models of how to achieve such transmission, and natural, meaningful feedback about the adequacy of communication. The communicative approach teaches children to talk by taking advantage of the pragmatic value of talk. It does not teach verbal responses apart from their pragmatic value (de Villiers & de Villliers, 1978).

This project represents an integration of these three themes in (a) teaching language in meaningful interpersonal contexts, (b) facilitating generalization by teaching children to use language to serve communicative functions in the environments in which they live, and (c) using a teaching method in which communication serves as a means as well as an end.

The Intervention Program

The communicative language training program developed in this project consists of a series of communication games that have many of the features of conversation. The games create situations in which players take turns, exchange information, request clarification from one another, and perform a variety of speech acts. The adult player models and facilitates effective communication but does not ask the children to repeat words or phrases and does not correct errors unrelated to meaning. When the child communicates effectively, this communication serves as a natural positive reinforcer. The child's task is to convey meaning clearly, not to obtain a reward or praise unrelated to his or her utterances. The games are usually noncompetitive; no one wins or loses. They involve simple formats, some, for example, resembling Lotto or Bingo, and they have only one basic rule: Use words. In short, they are referential communication tasks with a great many twists.

Both the content of the games and the game materials are determined by the practical needs, interests, and experiences of the children. While the games may be used to build vocabulary, many focus on particular multiword syntactic constructions. Games designed to elicit multiword utterances create situations in which one word alone is ambiguous; the communicative demand of the game, and not the adult's arbitrary demand, creates the need for multiword utterances. The games are particularly relevant to children's everyday communicative needs in focusing on language behaviors other than labeling. In these games, the children are never asked to use words simply to supply labels. Rather, they use words to direct other people, to make choices, to ask questions, and otherwise to do things with words.

Communicative Method

In a communicative teaching method, information is unequally available to to participants, and participants need to exchange information in order to achieve some common goal. Suppose, for example, that a parent is trying to teach his child to use words to request juice. The juice is out of reach of the child, and perhaps out of sight. The parent asks the child, "What kind of juice do you want? Apple juice or orange juice?" In this situation, the parent does not know which kind of juice the child wants. The child has information to communicate that is unavailable to the parent. If the parent and child are to achieve the common goal of providing the child with the kind of juice he wants, an exchange of information is necessary. The child who says "Apple juice" in this setting uses words to reply, to make a specific request, to differentiate between alternatives.

This parent's method contrasts with a noncommunicative method of teaching the child to produce the same utterance. In a noncommunicative method, for example, the parent offers only one kind of juice and makes the child's receiving the juice conditional upon his asking for it. In the noncommunicative situation, the parent will not give the juice unless the child asks. In the communicative situation, the parent cannot choose the juice the child prefers unless the child talks, because he does not know which to choose unless the child communicates a choice.

This example of a communicative teaching method typifies the use of communicative methods in incidental teaching situations (Hart & Risley, 1975). A situation occurs naturally, and a parent transforms it into an occasion for teaching the communicative use of language. The same kind of communicative method may, however, be used in structured teaching situations. Consider, for example, two instances of structured teaching, one noncommunicative, the other communicative.

In the first instance, a teacher is playing Lotto with a child. In order to make Lotto a game involving words, the teacher institutes the following rule: When the teacher holds up a picture card, the child is permitted to claim the card if and only if the child correctly names the picture shown on the card. The teacher holds up a picture of a cat, and the child may claim the card by saying cat or I have the cat. The child's utterance does not tell the teacher anything new. The teacher already knows that the picture shows a cat.

In the second instance, the need to use words is created in a different way. Instead of displaying the picture, the teacher deliberately conceals the picture while describing it (I have a cat. Does anyone have a cat?). The teacher and child reverse roles so that the child is the caller in the game. The child conceals the picture from the teacher and needs to say cat or Who has the cat? in order to inform the teacher about which card is being used. The teacher does not know until the child speaks which card is being played. This game is structured in such a way that information is not equally available to the participants. Consequently, the participants need to talk in order to play.

Noncommunicative methods are characterized by arbitrary demands for talking. If the child does not talk, then the teacher will not do something. In contrast, communicative methods create a genuine need for talk; if the child does not talk, then the adult does not know what to do. In the communicative examples, the child does something with words. The child who says apple juice selects something. The child who says cat tells the teacher which card is being played.

The purpose of the communication games described here is to create deliberately the kinds of communicative situations for which one must wait in incidental teaching and, furthermore, to structure those situations so that they make demands for particular linguistic elements and constructions.

The Playing Process

The communication games range in difficulty from simple games suitable for cognitively delayed children who produce only a few words to challenging games for children who produce multiword utterances. The games use a variety of formats and teach a variety of linguistic content. While the level of difficulty, the format, and the content may differ, the basic structure of the game playing process is the same in all games.

Roles. In every game the participants share two roles: those of "speaker" and "listener." The speaker has information unavailable to the listener that the listener needs in order to play the game. The listener, fulfilling a complementary role, needs the information the speaker has. These roles may be shared by more than two players. For example, one player may be the speaker while two or three players are the listeners.

Rules. All of the games have only one basic rule: Use words. Specifically, the speaker must communicate the needed information to the listener by talking. If the listener needs to know what picture appears on a card the speaker holds, the speaker must tell the listener, not show the card. If the listener who is trying to duplicate the speaker's arrangement of toys needs to know whether the speaker's doll is standing up or lying down, the speaker must not manipulate the listener's toys or show his or her own arrangement. Rather, the speaker must use words to tell the listener about the doll.

Turns. The players take turns as speaker and listener. The child first learning to play a game begins in the role of listener. Once the child shows some competence as the listener, the players reverse roles and continue to do so as the game goes on.

Process. The process of playing any of the communication games takes place in five steps. The first step, a check on prerequisite skills, occurs only at the begining of a game the child has not played before. The adult checks to make sure that the child has the picture recognition, matching, or other skills a game requires.

In the second step, one player, whom we shall call Player A, takes the role of speaker, and the other player, Player B, is the listener. Player A conveys information otherwise unavailable to Player B, and Player B makes a move in the game on the basis of that information.

In the third step, the players receive feedback about the effectiveness of the communication: Did the message get across?

Fourth, the players exchange roles. Player A is the listener, and Player B is the speaker. Player B now has information that is unavailable to Player A and conveys that information. Player A makes a move in the game on the basis of Player B's message.

Fifth, the players again receive feedback about the effectiveness of the communication.

The process then begins again at the second step; the players reverse roles. When a child is first learning a game format, Player A is the adult; the adult models the production of messages before the child is expected to try out the role of speaker. Often Player A and Player B are both children, while an adult temporarily fills in as speaker or listener, facilitates the children's communication, and otherwise monitors the playing of the game.

Program Characteristics

Recent research in language acquisition indicates that children learn to talk by having something to say in conversations with interested adults (Bloom, 1972; Cook-Gumperz, 1980). The games create situations that resemble conversational situations but that focus and intensify certain characteristics of those situations. Specifically, the games have the following features:

Information transmission. There is information to be conveyed, and the game situation, not the teacher, creates a demand for the use of language. In other words, there is a reason to talk other than to please the teacher; there is something that needs to be said.

Reciprocal roles. The child has the opportunity to encode and to decode information. The child is not a passive responder, nor must the child always hold the floor.

Contextual support. The transmission of information takes place in a meaningful context, and the language demanded by the games involves the here-and-now of the playing materials.

Feedback. The feedback provided in the games is the natural feedback involved in ordinary communicative situations. In the games, the reward is success in conveying information and not just success in pleasing the teacher. The games are structured in such a way that the child can perceive the adequacy or inadequacy of efforts to communicate.

In the communication games, considerable reward is provided for talking. When the child succeeds in conveying a message, he or she receivs the reward of having communicated effectively. The game works in some way: pictures match toys, pictures match each other, a hidden object is revealed, or something else happens. The adult understands what to do; the adult knows which picture to lift up, where to sit, or whatever. Other children understand their next moves. Furthermore, the adult shows obvious delight in the children's speech production. The adult smiles, hugs, cuddles, laughs, and responds with relevant conversational contributions. The adult wants to hear the child continue to talk and provides responses that encourage the child to say more about the topic of conversation. In short, the games concentrate and heighten the rewarding features of natural conversation.

As Brown and Hanlon (1970) discuss, parents seem to correct children on the basis of the truth value of statements, not on the basis of grammar. In the communication games, adults point out miscommunications, but they do not draw children's attention to features of talk unrelated to meaning.

In playing the communication games, adults provide feedback about the child's effectiveness and ineffectiveness in conveying propositional meaning. Because, however, the child and adult focus on the content of messages, feedback about miscommunication is not global feedback about the child. A few examples illustrate this point.

Many language-disabled children have relatively severe articulation disorders. In the communication games, the child who says tuck for truck and who otherwise misarticulates in a way unrelated to meaning is not corrected in any way. The child has communicated effectively even though he or she has not articulated correctly. There are ways to create a need for specific kinds of articulatory clarity, for instance, in games in which pie, pipe, drum, thumb, and other such pairs are involved. Communicating anything verbally requres some clarity of articulation. The communicative approach, then, does not ignore articulation. When particular misarticulations or general problems of articulation, volume, and pitch interfere with the listener's comprehension, the listener provides feedback. The adult may say, for instance: I can't hear you or I can't understand. Tell me again. In other words, the adult provides clear information about the ineffectiveness of the child's effort to communicate and simultaneously provides a genuine reason for the child to improve articulation. A recent study (Weiner & Ostrowski, 1979) reports that feedback to the effect that adults were uncertain about what children had said was effective in helping preschoolers to improve their articulation. In that study, the investigators pretended to be uncertain. In the communication games, there is no need for pretense. If one is playing a Communicative Lotto game with a child who does not show a card but describes it incomprehensibly, one genuinely needs to request clarification. In these games, if a child speaks too softly to be heard, sticks his fingers in his mouth and mumbles, or otherwise talks unclearly, one's incomprehension is a good reason to insist upon clarity.

These same processes occur in relation to the elicitation of multiword utterances. The child who says *truck* is often asked to say *This is a truck* or *I want the truck* or otherwise to provide a full sentence, however superfluous the words other than *truck* may be in the speech act the child intends to perform. In the communication games, superfluous elements are treated as such. If *truck* works within the context of a game, there is no good reason to ask the child to say anything else. One's task as a teacher is to create a reason by using a game in which one word is ambiguous (e.g., a game with a big truck, a small truck, a big car, and a small car).

Verbalization. The games create situations in which only words, not nonverbal means of communication, are effective. In one format, for example, a screen blocks each player's view of the other's toys, and the "use words" rule prevents the players from communicating nonverbally.

Specificity of content. The games are useful in teaching specific content, not all-purpose exercises in communication. One can teach specific vocabulary, elicit specific kinds of grammatical constructions, and otherwise decide what one wants to teach.

Models. The games provide the opportunity for adults and other competent players to model effective language use. The child is not simply placed in a situation in which there is a need to use language; he or she is also provided with a model of how to use language to meet that need.

Practicality of use. The games can be used by teachers and parents without a radical revision in their teaching styles, daily schedules, and such. The games are adaptable to different settings, to different teaching styles, and to children with different needs.

Design for young children. Adults and older children who enter speech and language therapy supply their own contexts for work on speech and language. They are motivated to improve because they understand that the way they talk affects other people's perceptions of them. Adults spend hours practicing the repetition of nonsense syllables if they understand that this practice is a means toward some end. Young children do not make a sharp distinction between the means and the end. For young children, the point of an activity is often the activity itself. Furthermore, unlike adults and older children, young children are generally not aware of their own language. They use language as a means of doing things, not as something to think about. Activities for these children, then, must be intrinsically interesting to them.

Young children's interests differ radically from those of older children and adults. They are not interested in improving articulation for its own sake. They are not interested in learning to produce agent + action + object constructions. They are not interested in improving their vocabularies simply to have larger vocabularies. They are, however, interested in playing with toys, in socializing with peers and adults, and in participating in activities for the sake of participation. Adults devote countless hours to pushing meaningless objects around gameboards in order to win games and to develop interesting strategies for doing so. Young children, in contrast, will spend countless hours pushing things around if those things are fun to push around.

Perhaps more importantly, language-disabled young children have needs that differ from the needs of adults and older children in language and speech therapy. The young child whose productive vocabulary is limited to 20 words, the child who cannot ask for his favorite kind of cookie, the child who cannot talk enough to communicate his excitement about a fire engine, the child who cannot even begin to converse with anyone outside his own family needs to work on language that allows him to do those things. He or she does not need to pronounce words perfectly or to use sophisticated verbal means for modulating meaning. The child who cannot say *potty* when he wants to go to the bathroom needs to learn to do just that. He does not need to pronounce *potty* perfectly and does not need to say *I want to go to the potty*. In other words, the child's immediate communicative needs should have priority over the fine points of articulation and grammar.

Opportunity for language use in context. The single most important feature of the games is that they teach language in the context of meaningul use. Although a main goal of the program is to encourage children who are habitually silent to talk more, the games create the need to use words for specific purposes. They provide a reason and an opportunity to talk. The games are helpful in increasing vocabulary, but they build vocabulary not by teaching children to pair words and objects or pictures, but by creating a reason to use one word for one object, another word for another object. A unique strength of these games is their usefulness in eliciting grammatical constructions. In the games, however, the children are put in a situation where there is a good reason to combine words. Syntactic skills are useful not because the teacher wants the child to say a given sentence but because the listener in the game needs to know several different but related pieces of information. Finally, the games create the need to use words to perform a variety of speech acts. The child is not taught to label pictures, then expected to generalize labeling pictures to requesting objects, asking questions, calling attention, and performing acts other than labelling. In Austin's (1961) terms, the games teach children to produce utterances with illocutionary force and perlocutionary effect as well as locutionary meaning.

Opportunity for practice. In incidental teaching, natural opportunities for making specific kinds of communications occur a limited number of times. For example, the frequency with which a child needs to ask for certain foods is limited. Playing repeated rounds of a game, however, is an ordinary and natural aspect of game playing. The communication games provide the opportunity for repeated practice and do so without the need for rote drill. Furthermore, children may practice the same linguistic content in different games. For example, a child learning to use prepositions may play one game in which he directs other players to stand in front of a chair or in back of the chair; another game in which he asks whether a toy dinosaur should be in front of a tree or in back of it; another game in which he guesses whether a picture of a cat in front of a ball or a picture of a cat in back of a ball conceals a hidden object.

Linguistic Content

The communication games may be used to teach a wide variety of semantic and syntactic content. The program may be used to teach specific skills like the meaningful production of color terms or may be used to help children develop more general conversational skills.

Explicit and implicit content. A linguistic element can be taught explicitly in these games if and only if that element can be used to differentiate between concrete alternatives, that is, if it can be used to make definite reference to one thing rather than to another. For example, color terms can be taught: Red is a word that can be used to differentiate between a red object and other objects. In contrast, This is a... constructions are not part of the explicit content of this program because one cannot use This is a... in order to achieve definite reference to particular objects: a cat and this is a cat cannot be used to differentiate between two cats; the two expressions do not serve to communicate information that allows a listener to pick out one particular cat.

Expressions like This is a..., modal verbs, exclamations, and many other linguistic items are among the most complicated and pragmatically powerful linguistic elements. While these elements do not serve primarily as encoders of propositional information, they are used to convey many kinds of pragmatic information. Furthermore, while these elements are not taught explictly in this program, they are taught implicitly in several ways. First, the linguistically competent participants in the games model the use of these expressions. Second, the games create situations favoring the production of these markers of pragmatic meaning. For example, the use of the expression What? is not taught explicitly. One does not use What? to differentiate among referents. In playing the games, however, one repeatedly encounters the need to request clarification. The expression What? is probably the simplest lexical means of doing so. While the child is not explictly taught to ask What?, he or she is implicitly taught to do so by being placed in a situation where that expression is highly functional and where an alert adult supplies What? at times when the child could appropriately use the expresssion.

Program Levels

For heuristic purposes, the content of the program may be divided into three levels of increasing complexity.

Level I refers to one-word utterances and includes nouns, modifiers, verbs, quantifiers, and several other classes of words that can be used as one-word utterances. Nouns taught at Level I of the program include proper names, terms for animals, food, familiar places and materials, and vehicles, as well as terms for people (e.g., woman, man, girl, boy), seasonal terms (e.g., pumpkin), and familiar activities. Modifiers taught at this level include, for example, terms like big and little, color terms, and certain quantifiers. Other Level I content includes verbs, locatives, and simple negation.

Level II games are games designed to elicit two-term constructions. Some specific constructions these games may be designed to elicit include the following: agent-object, agent-locative, entity-locative, possessor-possession, agent-action, action-object, and attribute-entity construction. Constructions of the form "Negative X," used to express nonexistence, are also taught.

Level III. The content of Level III consists of multiword utterances and certain devices for modulating meaning. For example, three-term constructions (e.g., agent-action-object constructions), prepositions, and contrastive word order may be taught at this level.

Program planning. These levels, it should be noted, refer to games and their content, not to children. One child may work concurrently on games at different levels. For example, a chronically silent child may be capable of comprehending and producing multiword utterances, yet may seldom say anything at all. Level I games might be used to help this child to produce speech in a minimally challenging situation. Level II games might be used to help this child increase the frequency with which he or she produces two-word combinations. Finally, Level III games might be used to help the child work on some specific skills, for instance, using words to encode exact information about spatial location. Some children may work at one level as listeners and at another level as speakers. For example, a child with expressive aphasia might function only as a listener in Level III games but as a speaker in Level I games.

The three levels of the program may be subdivided in a way that facilitates program planning.

Level I games may or may not involve picture recognition skills and may or may not involve matching skills. Level I-A games involve neither of these skills. Level I-B games require picture recognition skills but not matching skills. Level I-C games require both of these skills.

Level II and III games are subdivided in terms of the extent to which the games are highly structured or loosely structured. The loosely structured games are, in general, somewhat more difficult than are the highly structured games. Level II-A and III-A games are highly structured, while Level II-B and III-B games are loosely structured. Level III-C games are played without materials; they are word games, and hence are relatively demanding.

Game Formats

Game formats are basic procedures for playing games. A number of different formats are described briefly here.

Hiding games with objects. Hiding games are simple guessing games. One player hides an object, and another player or players guess the location of the hidden object. These games are useful in introducing children to the basic rules of the communication games. They are useful in initial work with a child because they are relatively undemanding yet fun; children with very small vocabularies can experience success at these games if the games are designed properly. Because Hiding games require few prerequisite skills, children who lack the skills necessary for some of the more advanced games can play them. Hiding games do not presuppose matching skills.

In the Hiding games with objects, a small object is hidden under a large object or concealed in the hands or clothing of the players. These Hiding games, then, are uniquely appropriate for children who lack picture recognition skills.

Hiding games with pictures. While Hiding games with objects are used mainly in introductory sesions and in sessions with children operating at low cognitive and linguistic levels, Hiding games with pictures are appropriate for many purposes with children of varied abilities. Instead of hiding a small object under one of a set of large objects, the listener hides a small object (e.g., coin, poker chip) or picture under one of a set of pictures. In order to communicate a guess about where the small object or picture is hidden, the speaker must describe the pictures in the set.

Hiding games with pictures are particularly useful in work with children who lack matching skills. This format appeals to some children who have well-developed matching skills; some children simply enjoy Hiding games.

Hiding games with pictures may be played with drawings, commercially available photographs, or photographs taken especially for the games. A particular advantage of the Hiding game format is that these games do not require duplicate sets of pictures as do, for example, Lotto games. Consequently, a set of pictures that appeals to a child may be used in a Hiding game without the time and expense involved in having the pictures duplicated. Pictures taken during a field trip may be used in a Hiding game immediately after the field trip. Family photographs, pictures from magazines, and other materials may be put to use immediately and easily in these games.

The main disadvantage of Hiding games, as opposed to the formats below, is that this format does not provide the kind of clear, redundant feedback from the materials that is available in Lotto, Bingo, Picture-Toy, and Identical Arrangement formats. The child who lacks matching skills is, by definition, unable to use feedback that comes from the observation of a match, so this is not a serious drawback for those children.

Communicative Bingo and Lotto games. Lotto and Bingo games are probably familiar to all adults. A caller holds a deck of picture cards or draws tokens with numbers written on them. The caller displays and calls out one picture or number (e.g., the familiar "B6," "N9," from Bingo). Each player has a card showing pictures or numbers. If the player has the picture or number displayed by the caller, that player covers the appropriate picture or number on his card. The first player to fill a card by covering all the pictures or numbers wins.

As Lotto games are usually played in preschools, these games do not require the use of language. The "caller" holds a set of pictures and simply displays one picture. The player whose card shows that picture claims it and places it over the matching picture on his or her card. Played in this manner, Lotto is a matching game and does not involve language. In an effort to make Lotto a language game, teachers sometimes require that the caller call out the picture in addition to displaying it. For example, instead of merely holding up a picture of a zebra, a child may be asked to say Who has the zebra? while displaying the picture. The players may also be required to respond verbally in order to claim the card (e.g., I do, or I have the zebra). Because the caller displays the card, however, there is no real need to talk in this kind of Lotto. The requirement that the children call out the cards and claim them with words is arbitrary.

With a slight change in the rules, Lotto becomes a communication game. Instead of being asked to display the card, the caller is forbidden to do so. Rather, he must describe the picture without showing it. When this rule is invoked, the caller or speaker has information to communicate that is not transmitted visually. The listener or listeners need to understand the caller's words in order to play.

Communicative Lotto is played with one adult and one child, one adult and several children, or with groups of children supervised by an adult. It is used to teach vocabulary, syntax, and articulation. Unlike the Hiding games discussed previously, Lotto games require picture recognition and matching skills. Furthermore, the format of Lotto games is somewhat more difficult for very young children and for children functioning at low cognitive levels than is the Hiding game format. In general, there is no need to complicate the game by introducing the competitive element that makes Bingo or Beano a game for adults. Children are usually happy to play simply in order to keep playing. Some children, however, enjoy playing to win.

The main advantage of Lotto and Bingo games over the simpler Hiding games is that the use of duplicate materials permits children to verify the adequacy of communication by looking at the materials. If an adult says cat, and the child selects the picture of a cat, the adult then shows the child a picture identical to the one he or she selected. The match or mismatch of pictures provides feedback about the adequacy of communication, feedback that comes from the materials, not simply from adult judgments.

The difference between Lotto and Bingo games is mainly a difference in what one uses to cover up the items on one's cards. In Lotto, one claims a picture from the caller and uses that picture to cover the corresponding picture on one's card. In Bingo, some arbitrary marker such as a poker chip is used. Consequently, in Bingo, a picture may appear more than once on the master cards. The advantage of Bingo, using chips rather than pictures, is that several different players may respond to the same picture. If the dealer says Zebra, then several different players may respond, covering the zebras on their cards. In Lotto, however, each picture may occur on one and only one playing card, since only one player may claim the picture. Because the chips are arbitrary markers, some children have difficulty in playing Bingo but have no trouble with Lotto. If a child seems to find the poker chips a confusing complication, one should stay with the simpler Lotto format.

Picture-Toy Matching games. The materials for these games are sets of toys together with corresponding sets of photographs of those toys. One player uses the photographs to direct the other player's manipulation of the toys. Because these games involve toys, they are very appealing to children. As pedagogical devices, they have other uses as well. The player holding the photographs has the opportunity to direct the actions of the other player. Because the player with the photograph can see what the other player is doing, he or she can provide corrective feedback. The player manipulating the toys often needs to request clarification. These games, then, foster an interchange between players and encourge the use of language to direct others, to request information, and to provide clarification. Picture-Toy Matching games can be simple one-word games. A particular advantage of this format, however, is that it lends itself to the creation of complex, highly motivating games using large, coordinated sets of interesting materials. For example, this format is used for games involving large toy farms, zoos, villages, and other complicated arrays of toys.

Identical Arrangement games. The Identical Arrangement format is an adaptation of a procedure used in many research studies of referential communication (e.g., Krauss & Glucksberg, 1969). In Identical Arrangement games, players use identical sets of toys or pictures. The players are separated from one another by a screen. One player arranges the toys or pictures and describes the arrangement. The other player tries to duplicate the first player's arrangement. The screen is removed and the players check to see whether the arrangements are identical.

This format resembles that used in Picture-Toy Matching games, but it has several advantages and disadvantages in comparison with that format. The main advantage of this format is its flexibility. When photographs are used, the players are limited to the arrangements shown in the photographs. Furthermore, the children do not initiate the arrangements, but rather, must follow the arrangements an adult has decided upon. When toys rather than photographs are used, the child has the chance to make any arrangements he likes. Similarly, the adult may introduce many variations.

On the negative side, the adult loses some control over the game in this format. The child is free to make whatever arrangements he likes, so the adult controls only his or her own arrangements, not the child's. Because of the freedom to arrange the toys, children may find this format difficult. They may have a hard time thinking up arrangements. They may also create arrangements that they then find difficult to describe. Furthermore, if two children play together, a child's description of a complicated arrangement may be hard for the other child to follow.

Although these games may be somewhat challenging for children, they are also highly entertaining. Furthermore, the situation created in these games is very close to ordinary conversational situations involving children. When children engage in free play, they tell other children what to do with toys. In play, there is no one predetermined model of what to do with toys, nothing equivalent to a photograph. Rather, children decide what to do and decide what to tell others to do. The flexibility and freedom of this format, then, resembles the flexibility and freedom of ordinary play, while the game introduces considerably more structure and more demand for language than is found in ordinary play with toys.

Action-Directive games. In these games, one player directs another player to perform various actions. Some of these games are played using photographs of the players; some are played using a screen to separate the players. A challenging game, "Cooperative Arrangement," relies on the players' ability to provide feedback without using either photographs or model arrangements.

In Action-Directive games with Pictures, the speaker uses photographs of the listener in order to direct the listener. If the photograph shows the other player sitting, for example, the speaker tells the listener to sit, then the players use the photograph to verify the adequacy of communication. Because these games involve photographs of the players themselves, the children can be involved in the process of constructing the game materials. The photographs are, of course, interesting and motivating to the children.

Guessing games. The Hiding games discussed above are one form of guessing game, primitive kin of familiar games like Twenty Questions. Guessing games themselves are a heterogeneous collection of games in which the speaker makes a verbal guess about something.

The source of feedback about the accuracy of the guess varies from game to game. In one game, the speaker guesses the sources of sounds heard on a tape recording. Some sophisticated guessing games are played only with words, not with materials. Guessing games range in difficulty from very simple games to challenging word games.

Content and Design

Communication games may be used to teach the production and comprehension of words in one-term, two-term, and multi-term utterances; the games are useful in building vocabulary, teaching specific grammatical constructions, and improving articulation related to meaning. The game materials are designed or selected to necessitate the use of target sounds, words, or constructions in differentiating between alternatives. Two examples illustrate this point: games to improve articulation and to teach two-term constructions.

Articulation games. The materials for games designed to improve articulation consist of pictures of objects designated by words differing in a single sound. For example, a game for improving the articulation of final consonants is played with pairs of pictures showing objects like a bell, a belt, a pie, a pipe, a cat, and a can. If this set of pictures (in duplicate) is used in a Communicative Lotto game, the speaker finds that the presence or absence of final consonants is important in conveying meaning. The use of pie to mean pipe, for example, results in a mismatch between the speaker's card and the listener's selection of a picture. The speaker must produce and the listener must attend to the final consonant for communication to be effective. In contrast, if the picture of the pie were omitted from the set, the speaker's production of pie would clearly be an effort to refer to the pipe; in that context, there would be no obvious, immediate need to use the final consonant.

Two-term constructions. In games designed to teach two-term constructions, it must be necessary to produce two terms in order to differentiate between alternatives. Suppose that the pictures for a game show a man standing, the man sitting, a boy standing, and the boy sitting. As a means of picking out one and only one of these pictures, the production of man, or stand, or boy, or sit is ineffective; any single word is ambiguous. The speaker must specify both the agent and the position the agent occupies. The context of the four pictures provides a reason to use nouns as agents; to use verbs of position; to use both.

Pictures may be selected to elicit other constructions as well. For example, modifier plus noun combinations are taught if the pictures show a red car, a blue car, a red truck, and a blue truck. Similarly, a set of pictures showing a boy patting a horse, feeding the horse, patting a cat, and feeding the cat is appropriate for teaching action plus object constructions.

Toy selection. Toys as well as pictures may maximize the need to use specific linguistic elements and constructions. For example, an Identical Arrangement game played with a large red dinosaur, a large black dinosaur, and a bridge for the dinosaurs to go on or under will maximize the need to use color terms and locatives. (Which dinosaur? Under or on the bridge?) The addition of small red and black dinosaurs will maximize the need to use size terms and to do so in combination with color terms.

The Teacher's Role

In the communication games, the context created by the materials and by the "use words" rule demands the use of specific linguistic devices. The burden on the teacher is to create materials that make specific demands. Instead of trying to exhort or persuade the child to use new words, to produce final consonants, to combine words, or otherwise to do something new with language, the teacher creates a game in which new words, final consonants, word combinations, or other features of language are important in conveying information. For this reason, the selection and design of game materials is more important for communication games than for most other language development activities.

When playing the games, the teacher fills many roles. The teacher restates children's utterances, clarifies meaning, facilitates communication, models utterances, points out matches or mismatches, provides topic-relevant reinforcement, and helps to create and maintain a happy atmosphere. When children are first beginning to play a game, the teacher often plays the challenging role of speaker. In one-to-one work with a child, the teacher and child play the roles of both speaker and listener. In work with dyads or small groups of children, the teacher may be a player or may be a bystander, facilitating and clarifying communication but not actually taking a role in the game. If a child has difficulty, the teacher may temporarily take over for the child, filling in for the child and showing the child how to play; a bystanding teacher may thus step in and out of the game as needed. The teacher may team up with a child experiencing difficulty; the teacher and child may function as one player.

In the communication games, the teacher must be careful to avoid requesting language not really needed to play a game. For example, if the child's utterance of cat lets the listener know what to do, then the teacher does not ask the child to say The cat, A cat, The cat is sitting, or anything else. When the child's meaning is clear, the adult does not ask the child to repeat or to imitate.

If, however, the teacher or other players cannot understand a child, it is appropriate to request clarification or repetition: What?, Tell us again, Which one? Teachers experienced in using noncommunicative language activities may expect some initial difficulty in remembering not to ask for repetitions, expansions, and extensions of utterances unless these are essential to communicate information.

Summary

The intervention program developed in this project integrates contemporary themes in the field of language intervention by teaching language as a means of serving communicative functions in meaningful interpersonal contexts and by using a teaching method in which communication is a means as well as an end.

The communication games that make up the program all have the same underlying structure and characteristics. The playing process focuses and intensifies certain characteristics of ordinary conversation. Linguistic elements can be taught explicitly in the games if and only if those elements can be used to differentiate between concrete alternatives, that is, if they can be used to make definite reference to one thing rather than to another. Markers of pragmatic rather than referential or propositional meaning are taught implictly by modeling and by creating situations that favor the use of these elements.

The program is divided into three levels of complexity, and a variety of game formats are available for teaching the comprehension and production of a variety of linguistic content.

CHAPTER THREE

INTRODUCTION TO THE EVALUATION: APPROACH, POPULATION, AND SAMPLE

In examining the impact of language intervention, one has many options: to use standarized tests or descriptive procedures, to quantify or to rely on clinical judgments of quality, to focus on events within training sessions or to focus on generalization from clinical to nonclinical situations, to mention only a few. In ideal situations of infinite resources, these options are not mutually exclusive. In practice, given the limited resources of any project, one must select the assessment approaches that mesh with one's particular goals. This first section of this chapter explains the options selected for this project, and the second section describes the population and sample.

Groups Comparisons and Case Studies

Recent interest in the single-case approach to evaluation highlights the advantages of collecting and analyzing large amounts of data about individual subjects. For projects involving clinical content, a major advantage of focusing on individual subjects is the clinical meaningfulness of case presentations. Language and speech pathologists, for example, are concerned with the needs of individual children; they are concerned with the appropriateness of an intervention for the individuals they treat. The effectiveness of an intervention, on the average, for a large group is irrelevant to their needs unless the intervention also works for the individuals assigned to them. In a group-comparison approach, individual variation is simply within-group error variance; children who fail to progress may, in effect, be lost in the mass of those who do well. Conversely, children who make striking progress may be ignored if the average picture is one of stagnation or loss.

Single cases, however, do not provide data designed to answer traditional evaluation questions that inevitably occur to anyone who designs or applies intervention programs. In reading case studies, one inevitably wonders: Yes, but on the average, what happened? Single cases can, of course, be replicated. Furthermore, as Hersen and Barlow (1976) and others point out, the question of generalizing results from research to clinical practice appears whether one uses a group-comparison or a case approach. Specifically, in a case approach, one faces the problem of trying to generalize from the particular case to groups or to other individual cases, while in the group-comparison approach, one faces the problem of generalizing from groups to particular individuals. In both situations, then, making sound judgments about what to do in a particular clinical or pedagogical situation involves the consumer's assessment. Is this case study like the individual situation about which I must do something? Is the child described in this case like or unlike the child who now concerns me? In what ways? Is the group of children studied by these researches like the group in my classroom? No researcher can answer these questions. At best, one can hope to provide the information needed by the consumer; one may provide detailed information about exactly who the particular subjects were when one presents cases or group comparisons.

In contrasting single-case and group-comparison approaches, it is also important to note that the two are not mutually exclusive. This report presents both. In practice, an important distinction between the two is the amount of information one may reasonably gather and process for case studies and for group comparisons. An intensive case approach aimed at generating a very detailed picture of an individual at different points in time involves the collection of massive amounts of different kinds of data. For example, the background data available on a child includes much more than the information one punches onto computer cards. One knows the child, the child's family, the personalities of everyone who deals with the child. One has a sense of how everyone interacts with the child. One knows details of the family history, the child's medical history, the child's likes and dislikes, the quality of the child's affect, and so forth and so on. Furthermore, one has available on audiotape massive amounts of information about the child's behavior at different times: Speech samples in training sessions, in spontaneous play situations when the child was using different materials with different people. Potentially, one could find out even more about about the child: One could, for example, give many batteries of tests and could do so repeatedly.

In reality, one inevitably knows less about the children in a group-comparison study. Furthermore, one inevitably communicates less to the consumer of the research.

In this project, our aims inlcuded both program development and evaluation. Had our purpose been to evaluate a preexisting program, our choice of evaluation procedures might have been different from what it was. Specifically, we might have allotted a larger percentage of our resources to the very time-consuming task of developing more single case studies. Fortunately, however, we were not forced to choose between the individual and group-comparison approaches, and we present both kinds of results in this report.

Data Collection: Clinical and Natural Settings

The traditional approach to the evaluation of language intervention is to ask, first, whether the intervention worked within the training situation and, second, if so, whether it generalized outside that setting. For example, if a behavior modification program aims at training a child to respond to pictures of familiar objects by saying "This is a ...." instead of telegraphically supplying the bare noun, one might measure the program's effectiveness in helping the child to do this during the training, and one might also follow the child around in his daily life recording occasions when he used the telegraphic and expanded forms to provide labels.

The above approach does not mesh easily with the overall goals of this project for a number of reasons. First, the distinction between the training and natural setting is not a sharp one. Indeed, to call this intervention program "training" is something of a misnomer. We aimed at facilitating language development, not just at training specific skills. The intervention is structured, but the structure includes and heightens features of normal conversation, and rewards are natural ones.

Second, the games played in the program may change rapidly in content to meet the needs and interests of the child. A child does not, as he would in a classic operant program, work with the same linguistic content and materials until he reaches 100% mastery or anything close to it. That is certainly not the way that children spontaneously acquire language, and there is no reason at all to impose that framework of mastering separate content step-by-step on this intervention program. Rather, if a child is bored with a game, he does not play it. If he likes a game, he does play it. If the trainer perceives that the child would like to work on something new, the trainer creates a game appropriate to the content. In short, the content of the games is not rigidly systematic in the way that the content of traditional operant training programs is systematic. It resembles the natural content of normal children's language learning, not the content of operant training programs.

Our solution to the problem of where to collect the data was a compromise. We collected data during game sessions. We also collected spontaneous speech samples before language intervention began and thereafter at four-month intervals in a conversational situation, as discussed elsewhere. In the analyses, the within-clinical-session data were used for single cases, and the spontaneous speech data were used for group comparisons as well as for single cases.

Speech Samples versus Tests

A theoretical framework in which language is understood as a complicated set of cognitive-symbolic processes as well as a set of behaviors raises questions about measurement that do not occur in a traditional operant framework. Furthermore, it is easier to evaluate a program with highly limited goals than to evaluate one with broad goals. For example, it is a great deal easier to evaluate a program in which the aim is to increase a child's use of present possessive endings in obligatory contexts than one in which the aim is to have an impact on the quantity and quality of a child's conversational contributions.

Our aims, however, were practical and behaviorally specifiable. In selecting evaluation procedures and outcome measures, we were guided by the clinical problems these children presented in their behavior. While not behaviorist, we were behavioral in our aim of changing language performance. We also made a decision to focus the evaluation on the children's expressive rather than receptive language, since the overwhelming problems of these children appeared to be in that area. With regard to their expressive language, notable clinical problems were evident in all areas. Fortunately, spontaneous speech data can be analyzed for many different purposes. Speech samples also provide the kind of clinically meaningful information about individuals that we needed for planning interventions and for focusing on the progress of individual children; they were useful in providing nonquantitative as well as quantitative data.

The obvious alternative to the speech sample data would have been a battery of tests; no single test would have given the variety of information we required. Unhappily, the available tests are not very satisfactory, even within the areas of langauge they are intended to measure. For example, the Peabody Picture Vocabulary Test (Dunn, 1965) is entirely unsuitable for this population since it depends upon children's ability to interpret line drawings. We could not take that ability for granted. The Illinois Test of Psycholinguistic Ability (Kirk, McCarthy, and Kirk, 1968) and other standardized tests have received a great deal of criticism lately as assessment tools for this population (see Muma and Pierce, 1981). In particular, these tests rely heavily on elicited imitation, cloze procedure, and other tasks that are highly inappropriate for evaluating the impact of the intervention procedures developed in the project, a program in which we deliberately avoided training children to perform those kinds of one-right-answer tasks. There was at the start of the project, and there remains at its end, no test of pragmatic development that is suitable for these children.

Two other characteristics of the population also made most available tests unsuitable. First, many of these children would have tested simply as "untestable." They would have been quite unable to attend to the tasks involved, and any results obtaind would have been of questionable validity. Second, the language level of these children was, by almost any standards, very low. It seems likely that many tests would have led to floor effects--the children would have tested at the bottom on any tests and, even with clinically meaningful improvement, would have continued to test there.

In short, speech sample data, while far from ideal, met our needs, and the alternatives were clearly unsuitable.

Future Evaluation

As suggested above, what Seibert and Oller (1981) have called the "pragmatics revolution" affects not only intervention but also evaluation procedures. At the time of this writing, the pragmatics revolution is underway, and the usefulness of different evaluation procedures is a topic of considerable interest as well as controversy. Consequently, one theme that we emphasize in presenting evaluation data is the theme of the relative usefulness and meaningfulness of particular data and analyses presented. In short, while we are concerned in the following chapters with providing exploratory answers to questions about the impact of this intervention, we are also concerned with using the experience of this project to guide future researchers evaluating this and other programs with similar aims.

Target Population and Sample

Language delays and disabilities in young children may be symptomatic of many organic and nonorganic conditions. They take many forms and range in severity from minor deviations and lags to the entire absence of language. The target population for the intervention program developed in this project is a broad one; the intervention is appropriate for many language-disabled children. As spelled out below, however, it is not universally appropriate, especially in its present form. Children with serious visual and auditory disabilities, classically autistic children, and entirely nonspeaking children, for example, are unsuitable candidates for this intervention. As discussed at the end of this chapter, the intervention is potentially appropriate for a wider range of language-disabled individuals than were of concern in this particular project.

Eligibility Criteria

The population for whom the program was developed consists of young children with serious language disabilities. Specific eligibility criteria for participation in the project were as follows:

1. Age. Age was defined to coincide with the usual definition of early childhood, that is, between 3 and 8 years of age.

2. School attendance. Because we were developing a program to be used in schools, we aimed only at children attending school. Children in both special needs and mainstreamed settings were eligible.

3. Diagnosis. Children were not excluded on the basis of diagnosis, with one exception: Children fitting the classic pattern of early childhood autism were ineligible. Children displaying some autistic-like features and behaviors (e.g., echolalia, facial grimaces, avoidance of eye contact), however, were not automatically excluded. We were concerned with defining the population by language function, not by diagnosis.

4. I.E.P. The Individualized Education Programs of all children called for language remediation.

5. Absence of disabilities interfering with this intervention. Children are inappropriate for this intervention program is they are unable to see the materials; unable to hear normal conversation; unable to control their behavior enough to stay in the game-playing situation and to give some attention to the tasks; or physically unable to manipulate the materials. Consequently, children with serious visual or auditory disabilities were excluded, as were children with serious orthopedic handicaps affecting the hands and arms in a way that would prevent game-playing. Children with extremely severe behavior problems were also ineligible.

These criteria were used very flexibly. Poor fine motor coordination is very common in the population of interest, and the materials developed in this project do not require great dexterity. Furthermore, some materials were developed specifically for children with poor fine-motor skills (as noted in Volume II of this report). The population of young children with language disabilities also includes many who have behavior problems of one kind or another, and to exclude those children would be needlessly to narrow the range of eligible children. A practical rule of thumb is that a child's behavior problems prevent his participation in this program only if a skilled clinician simply cannot succeed in engaging him in the games.

6. Language performance. The presence of a language disability was identified clinically. Specifically excluded on this basis were the following disabilities:

a. disability limited to articulation;
b. disability limited to odd content;
c. the complete absence of speech.

It was our experience that teachers and directors, when asked to make referrals for language disability, did refer children with problems limited to articulation. We were also referred several children who talked at fluent length about bizarre content. These children were excluded from the sample.

The clinical impression of a moderate to severe language disability refers to the presence of some constellation of the following characteristics:

a. chronic silence;
b. short utterances, telegraphic speech;
c. limited vocabulary;
d. chronic incomprehensibility resulting from misarticulation, low volume, small vocabulary, limited syntax,

and the failure to take the needs of the listener into account;

e. a narrow range of uses of language.

Target MLU was in the range between 1.0 and 2.0. The closest clinical description in the literature of the target population is Wyatt's (1969) description of "poor communicators," children who have "generalized, all-pervasive deficiencies in verbal communication" (p. 254). They have small vocabularies, and their articulation is often imprecise. Their spontaneous speech is scanty and consists of brief utterances. They rarely initiate conversation, and they use language to serve only a limited range of pragmatic functions. The population for the present project, however, was at a somewhat lower level that what Wyatt appears to have had in mind.

It should be noted that the population, while including many children from poor families, is not identical with the target population for the language intervention efforts of the 1960s, directed at "breaking the poverty cycle" (Wiliams, 1970). The language problems of our children, while often exacerbated by family conditions associated with poverty, are much more severe than those of the children who used to be called "culturally disadvantaged." At the other extreme, this population does not include entirely nonvocal children; children never heard to say anything intelligible were excluded.

Sample Selection Procedures: Years 1 and 2

The children with whom staff worked directly were selected as follows. Having obtained permission to work in a school, we identified potential subjects by (a) asking directors, supervisors, and teachers for referrals and (b) visiting classrooms for informal observations. During classroom visits, we were quickly able to identify as ineligible children with minor articulation problems, children with high-level language difficulties, and other obviously inappropiate children. It is of some interest to note that, despite our efforts to explain clearly the kinds of children we sought, we received numerous inappropriate referrals. In particular, we often experienced referring adults as struggling to remember what they had read about the difference between language disabilities and speech disabilities. Consequently, an entire chapter in the book produced by the project (Volume II of this report) is devoted to assessing the appropriateness of children for the program.

Having ruled out obviously ineligible children, we then spent considerable time in classrooms observing children who seemed likely candidates: Chronically silent children who, even when they did talk, said little and said it poorly; children who failed to use language to ask for things, to play with others, to chat; and other children meeting the criteria discussed above. We also read children's records. In examining records, we paid particular attention to information about audiological testing, and we also questioned school personnel about suspicion or knowledge of hearing loss. Children with known hearing loss were excluded if that loss interfered with hearing conversation at normal tones. In one instance, after beginning work with a very delayed and difficult child, we insisted that an audiological examination be conducted and arranged for testing at a nearby clinic; the results showed that the child's hearing was perfectly normal, and he was retained in the sample.

In the schools were we worked during Years 1 and 2, all children meeting the criteria, as assessed in these procedures, were selected. These criteria and selection procedures were used for treatment and contrast groups. It should be noted that obtaining a contrast group was considerably more difficult than obtaining the treatment group, since we could not offer immediate service to those children. Consequently, children serving as the contrast group for the between-group comparision were in schools to which we could offer service at a later time point. Specifically, in Year 2, we were able to offer schools the incentive of including their teachers in the project during Year 3.

Informed Consent

Obtaining permission for participation consisted of two steps: obtaining permission from schools and obtaining parental permission. Schools were contacted and the project explained to them. Our experience was that schools were unusually receptive to this project. Schools in the Boston area are frequently deluged with requests from researchers and are cautious about granting permission for research. We were welcomed and allowed into schools easily, perhaps because we were offering services, but also because the nature of intervention appealed to school personnel. We experienced difficulty with only one school system, and, in that case, the principal of the school housing the special needs preschool we hoped to enter simply refused to allow any outsiders at all into his school. In short, it is worth noting that the idea of this intervention was a very attractive one to school personnel, and enlisting schools as participants in the project was an easy and pleasant task.

Because of our good relationships with school directors and teachers and their eagerness for the project to run smoothly in their schools, we obtained great cooperation in soliciting and obtaining parental permission. Letters from project staff, together with permission forms, explained the project and requested permission for children's participation. These letters were sent home to parents together with a cover letter from the child's teacher; or teachers or directors discussed the project personally with parents and gave our letters to parents. Sample letters and permission forms appear in Appendix B. Parental cooperation in giving permission was complete; no parents refused.

Protection of Human Subjects

The project posed no potential risks to subjects.

Confidentiality was insured by keeping all records according to coded identification numbers. In transcribing tapes and otherwise recording information, potentially identifying information was routinely changed or deleted.

Summary

Group-comparison and case-study approaches both have advantages and disadvantages; this study used both. Standardized tests are of questionable validity and appropriateness for the population of interest in this study. Speech samples, in contrast, can provide measures with considerable face validity and ones that mesh with the goals of this intervention.

The target population for the intervention consists of young children with serious language disabilities. Children eligible for the sample were between 3 and 8 years of age; attended school; were selected on the basis of language functioning, not diagnosis, except that classically autistic children were excluded; had I.E.P.s calling for language remediation; did not have disabilities that would interfere with the implementation of the intervention (e.g., had normal hearing and vision); and presented a clinical picture of serious language disability (e.g., target MLU between 1.0 and 2.0). All children in available schools meeting the criteria were selected, and parents of all gave informed consent for participation.

CHAPTER FOUR

DATA COLLECTION, CODING, AND RELIABILITY

The data on subjects selected using the procedures described in Chapter Three consisted of background data on children and families, and spontaneous speech samples collected at four-month intervals. As described below, speech samples were transcribed and coded, and composite variables summarizing the data were constructed and evaluated.

Background Data

Collection

Background data on children's ages, diagnoses, family composition, languages spoken in the home, principal wage earner's occupation, and other characteristics were obtained from school records, supplemented as needed by information from school personnel. The data were recorded using the form presented in Appendix C and were coded using the first section of the codebook presented in Appendix D. In most cases, extensive information was available in records: These were children with serious disorders who had often been worked up at several hospitals. As discussed in a section of the book produced by this project (Volume II of this report), it was necessary to compare materials in some records with information from school personnel and with the observations of the project staff, since records are sometimes of questionable accuracy. The most obvious example of the fallibility of the records was a case in which a young boy named Hilary (pseudonym), whose appearance was unquestionably that of a boy, was repeatedly referred to in one report in his record as "she."

One special provision in the coding was included to take into account the incompleteness or unavailability of a few records. Specifically, it was necessary to create a special category in the coding of diagnosis in order to include information about a few children who seemed clearly to have some very serious disorder but whose records were unavailable or incomplete. One such child came from a family that refused to release records to the school. This family declared that they had thrown out all records given them on the grounds that only happy thoughts were allowed to enter their home. The director of the child's school and project staff were unhappily aware that any diagnostic information about the child would have been far from happy. This child's diagnosis, for our coding purposes, was: "Serious disorder evident but records nonexistent, unavailable, or incomplete. The child seems to 'have something.'" This useful category is one we would advise including in other systems for coding data on this population.

Interrater Reliability

Many background variables simply record information obtained from children's records (e.g., chronological age, language of the home). Others, however, concern characteristics rated by project staff, for example, behavioral characteristics. For background variables involving such judgments, interrater agreement was assessed by having two senior staff members independently rate the 24 children whom both knew well.

For these variables, interrater reliability was examined by calculating the statistics for nominal scale agreement developed by Cohen (1960, 1968): Kappa (K) for the variables with categorical responses, and weighted Kappa (Kw) for the remaining variables, in which responses could be scaled. All such variables were rated using 3 point scales.

Calculating weighted Kappa involves the assignment of weights to agreements or disagreements. For these variables, the greatest weight (6) was assigned to disagreements between the extremes (e.g. Not shy vs. Shy). The next most serious disagreement was weighted 3: disagreements like "Not shy vs. Somewhat or sometimes shy." The least serious disagreement was weighted 1, for disagreements between the extent of a characteristic (e.g., Somewhat or sometimes shy vs. Shy). Agreement, or in these terms, no disagreement, took on the weight of 0. For the rating of cognitive level, the weights used were selected in such a way that disagreements about normal and seriously delayed levels were weighted most, then disagreements between mild and serious delay, then disagreements between normal and mildly delayed cognition.

The values for K and Kw for these variables are presented in Table 4-1, together with the more familiar percent agreement statistic for each variable. Agreement was sufficiently high to retain all variables, with disagreement (probably attributable to insufficiently precise variable definitions) mainly evident in ratings of (a) whether or not children relied heavily on pointing, tugging, and other nonverbal means of communication, (b) whether or not they pinched, hit, bit or otherwise physically injured others, and (c) the extent to which their speech was too low in volume to be easily understood. For the remaining variables, relatively good agreement was demonstrated (percent agreement above 65% and K or Kw above .60, usually considerably so).

Table 4-1

Interrater Reliability for Background Variables

Variable	Percent Agreement	Kappa or Weighted Kappaa
Extent of articulation difficulty	83.3%	Kw = .84
Child babbles	87.5%	K = .71
Silence-Talkativeness	66.6%	Kw = .74
Volume (normal-soft)	58.3%	Kw = .66
Reliance on pointing, tugging	70.8%	K = .33
Appropriateness-Inappropriateness	83.3%	K = .61
Shyness, withdrawal	87.5%	Kw = .86
Social loudness, assertiveness	79.2%	Kw = .82
Physical injuriousness to others	87.0%	K = .48
Social isolation	100%	K = 1.0
Cognitive level	91.7%	Kw = .90

Note: Independent ratings of n=24 children by two raters.

a. Kappa is reported for variables with categorical responses and weighted kappa for variables with scaled responses, all rated using a three-point scale. Weighting is explained in the text.

Linguistic Data

Collection

Spontaneous speech samples were obtained from all subjects as they engaged in one-to-one play with a familiar adult in the familiar settings of their schools. In all cases, the samples were obtained when the child was outside the classroom, in a quiet location. The adults were instructed by project staff and were asked to follow the directions presented in the instruction sheet entitled "Directions for Collecting Spontaneous Speech Samples" in Appendix E. Whenever possible, samples were collected by the children's teachers. In some cases, project staff familiar to the children collected samples because school personnel stated that they had no time to do so.

A rough quantitative check on compliance with instructions is provided by the category in the coding system presented below that measures the number of child utterances that were elicited imitations. Such utterances are responses to direct adult requests for imitation like: "Billy, say apple." Perfect adult compliance with directions would have meant the total nonoccurence of such utterances in the child speech. In the data for samples collected for 48 children at two time points (see Chapter Five), the occurrence was, in fact, very low. For the first set of observations, the category occurred for only eight of the 48 children; for five of those children, only once; for one child, twice; and for two children, four times. For the second set of observations, the category occurred once for four children and twice for one child, that is, for only five of the 48 children. In short, the data suggest that adults did comply with the instructions, a finding in accord with our impressions in listening to tapes and reading transcripts.

Recording

Ten-minute samples were audio tape-recorded using small, portable recorders. In fact, as indicated in the instructions, samples were obtained to yield ten minues of sample from the time of the child's first conversational turn; nearly all recordings hence ran slightly over the ten minutes. In a few cases, slightly less than ten minutes was available.

Transcription

A detailed typed transcript was made of each sample of spontaneous speech. The conventions used in transcription reflect an increasing awareness in the field of child language of the extent to which conventions of transcription affect one's interpretation of interaction (Ochs, 1979). Each recording was transcribed once by a transcriber, then listened to and corrected by a staff member. The conventions used in transcription are described in detail in Appendix F of this report.

Coder Training

The transcription and coding manual presented in Appendix F provided the basis for coder training. Coders read this manual and used it as a reference during coding. The training of coders consisted of reading the manual, studying precoded transcripts, coding practice transcripts, and comparing these codings with those of senior project staff. This process continued until satisfactory agreement was reached.

Our experience with this coding system showed that the second section of the coding, the section concerned with syntax, was best delegated to specialist coders. Coders with a background in linguistics learn this part of the coding system with ease, while those unfamiliar with the terminology require extensive training.

Coding

A few transcripts were just short of the ten-minute length, and for these, prorating was used.

The system used in coding the spontaneous speech samples is divided into three parts. The first section is devoted to measuring the amount the child speaks and MLU. The second section examines semantic and syntactic aspects of the child's expressive language. The third examines the speech acts the child performs. This third section is an adaptation of Dale's (1980) scoring system.

Amounts of speech. A summary form for recording the quantity of the child's speech during the sample appears in Appendix F. Three different units are used. First, words are dictionary entries. One entry in a dictionary is one word, with a few specified exceptions (e.g., names like "Cookie Monster" are one word, family nicknames for people, like "Nini" for grandmother, are one word). Second, conversational turns are equivalent to an actor's lines in a play. A turn begins when someone begins to speak and ends when someone else speaks or when the person pauses for the arbitrary time of 10 or more seconds. Third, utterances are sentence-like units of words grammatically related to one another. For example, "Give me the cat. The cat," contains two utterances, but it is a single conversational turn.

Conversational turns are classified as totally intelligible, partially intelligible, totally unintelligible, and "other." All of the words in a totally intelligible turn are comprehensible; none of the words in an unintelligble turn are comprehensible. "Other" turns are nonverbal but vocal turns: sighs, grunts, laughter and so forth count as conversational turns, but are classified as "other" rather than classified according to intelligibility. The remaining turns are partially intelligible. Partially intelligible turns may contain one or more intelligible words.

Precise operational definitions of these and other terms used in the coding of the subject's amount of speech are found in the coding manual in Appendix F of this report. Although this section reflects mainly how much the child says, as measured in various ways, several other aspects of the subject's speech are recorded here as well. Specifically, the number of turns the child takes that are exact repetitions of all or part of another's immediate preceding utterance are recorded. In addition, mean length of utterance in morphemes (MLU) is calculted. MLU is widely used as an index of syntactic development in young children (Brown, 1973). Although syntax is described in a separate section of the coding system, MLU is calculated to permit comparability with data from other studies; MLU is probably the single most widely used measure of syntactic development in studies of child language.

Notably missing from the coding of spontaneous speech is Type-Token Ratio (TTR). Type-Token Ratio is a measure of redundancy. It is the ratio of the number of different words used (types) to the total number of words used (tokens). Type-Token Ratio must be calculated using an absolute number of tokens because the extent to which speech is redundant is partly a function of how large a sample of speech is used. It makes intuitive sense that the more one talks, the more one is apt to repeat oneself. Type-Token Ratio is usually calculated on the basis of a large number of tokens, for instance, 1,000 or 500 words. For the population of interest, collecting a sample this large would be a project occupying an extraordinary amount of time. In an effort to use Type-Token ratio in a way that was appropriate for studying the expressive language of language-delayed children, we computed TTR based on 30 tokens for eight children involved in the initial phases of the project. The number 30 was chosen because most children spoke close to 30 words or more in the samples available. The result was a measure of redundancy, but not one comparable with other data on TTR based on large samples of tokens. This TTR based on 30 tokens was not, however, a useful measure since it showed virtually no variance either between or within subjects.

Semantic and syntactic features. The summary sheet used to inventory the subject's use of certain semantic and syntactic features of language appears in Appendix F. The coding of this section is explained in the coding manual also presented in Appendix F. The coding of this section reflects the child's use of certain lexical items and syntactic features of language, and also reflects the child's use of words in syntactic constructions. It provides a succinct summary of features a child does and does not use in a given sample, plus a summary of the extent to which the child uses a narrow or wide range of features and constructions.

Pragmatics. The system used to code certain pragmatic aspects of the child's language is adapted from Dale (1980). The summary sheet for this section of the coding system appears in Appendix F, with detailed instructions for coding this section.

In this section, each utterance in the sample is classified in two ways: according to "dialogue status" and according to pragmatic function. The dialogue statuses coded are as follows: An utterance may be an elicited imitation, a spontaneous imitation, a prompted utterance, an inappropriate or perseverative utterance, or it may be classified as "other," that is nonimitative, unprompted, and appropriate. Echolalic speech is coded as "inappropriate." The pragmatic functions coded include naming, commenting, requesting information, affirming, denying, and various other speech acts. A residual "other" category is also included.

This section is intended to reflect the extent to which the child uses language for a variety of functions, as well as the extent to which he or she uses language in particular ways.

Discussion. This coding system provides a detailed description of four aspects of the child's language: amount of speech, semantics, syntax, and pragmatics. The coding system gives information that is clinically useful both in facilitating informed decisions about what to teach and in providing objective feedback about improvement or nonimprovement. It also provides assessment data with considerable face validity. Specifically, the main presenting problem of the population of interest is that the child talks little, uses few words and constructions, and does not use language in an effective way. This system records exactly those aspects of the child's language evident in the spontaneous speech samples.

It would have been desirable to measure child subjects' receptive language abilities as well as their expressive language. As discussed above, however, tests like the ITPA (Kirk, McCarthy, and Kirk, 1968) and the PPVT (Dunn, 1965) are of questionable validity and, furthermore, are inappropriate for the population of this project. There does not seem to be a valid and appropriate test of the receptive language ability of this population.

Interrater Reliability

Interrater reliability for the variables in the first and third sections was assessed by having two coders independently code randomly selected subsamples of 25 transcripts. (Separate subsamples were used for each section of the coding system.) For each section, two sets of codings were then compared.

For the variables in the second section of the coding system, syntactic variables, intrarater reliability was assessed for the specialist coder responsible for this section. A subsample of 25 transcripts was randomly selected, and the specialist coder coded these a second time without reference to the first coding. A minimum of two weeks elapsed between the first and second codings.

For dichotomous variables, the statistic used to assess agreement was Kappa (Cohen, 1968). For the remaining variables, the intraclass coefficent is reported. For two raters, this is equivalent to the familiar Spearman-Brown split-half coefficient (see Winer, 1971, p. 286). The Pearson correlation coefficients are also reported.

The variables in the first section of the coding system, variables pertaining to amount of speech and mean length of utterance, all showed acceptably high agreement between coders, with correlation coefficients all above .75 and nearly all well above .90. Intraclass correlations for these variables were all above .86, with most above .98, as shown in Table 4-2.

The results pertaining to intrarater reliability were as follows: The dichotomous variables (whether the child used yes or some equivalent word; used no or an equivalent; used negation; used marked interrogatives) showed acceptably high agreement, with Kappa ranging from .71 to 1.0. For the remaining variables, the correlations between ratings were all above .79 and intraclass correlations above .87, as shown in Table 4-3.

The final section of the coding system pertains to the child's speech acts. Because this section requires the greatest amount of rater inference, it is not surprising to find that interrater agreement, while acceptably high, was somewhat lower for this section than for the others. All correlations between codings were above .65 with one exception: The correlaton between the two codings for the "Name" category of the system was .57. All intraclass correlations were above .72. Results appear in Table 4-4.

Table 4-2
Interrater Reliability for Amount of Speech and Length of Utterance Variables

Variable	r	intraclass r
Number of totally intelligible turns	.93	.97
Number of partially intelligible turns	.99	.99
Number of unintelligible turns	.96	.98
Number of other turns	.75	.86
Total number of turns	.99	.99
Number of intelligible words in partially intelligible turns	.99	.99
Number of partially intelligible words in partially intelligible turns	.99	.99
Number of words in totally intelligible turns	.98	.99
Total number of words	.99	.99
Number of one-word turns	.99	.99
Number of two-word turns	.99	.99
Number of three-word turns	.96	.98
Number of turns longer than three words	.99	.99
Number of turns consisting of "yes," "no," or equivalent	.99	.99
Number of words in longest totally intelligible turn	.99	.99
Mean length of five longest totally intelligible turns	.99	.99
Number of repeated turns (exact repetition of other)	.99	.99
Mean length in words of totally intelligble turns	.99	.99
Mean length in words of totally intelligible turns other than "yes" and "no" turns	.85	.92
Mean length of utterance in morphemes	.82	.90

Note: Independent codings of n=25 transcripts by two raters.

Table 4-3

Intrarater Reliability for Syntactic Variables

Variable	r	intraclass r
Number of noun categories	.85	.92
Number of different modifiers	.93	.96
Number of different action verbs	.98	.99
Number of times action verb used	.98	.99
Number of different status verbs	.94	.97
Number of times status verb used	.99	.99
Number of different quantifiers	.84	.91
Number of different proforms other than pronouns	.89	.94
Number of different pronouns	.96	.98
Number of different recurrence terms	.80	.89
Number of different nonexistence terms	.84	.92
Number of complex modulation categories	.91	.95
Number of different temporal terms	.96	.98
Number of different locative terms	.79	.88

Dichotomous Variable	Percent Agreement	Kappa
Uses any "yes" term	100%	1.0
Uses any "no" term	100%	1.0
Negates	84%	.71
Marks interrogative	76%	.54

Table 4-4

Interrater Reliability for Speech Act Variables

Variable	r	intraclass r
Name	.57	.73
Attribute	.73	.84
Comment	.94	.97
Request Present	.76	.87
Request Absent	.65	.79
Request Information	.96	.99
Nonexistence	.98	.79
Rejection	.75	.86
Denial	.65	.79
Affirmation	.95	.98
Other	.65	.79
Tense-marked	.81	.90
Inappropriate	perfect agreement of nonoccurrence	
Elicited Imitation	perfect agreement of nonoccurrence	
Spontaneous Imitation	.89	.94
Total Number of Categories	.68	.87

Note. Variables are numbers of utterances in each category for ten-minute spontaneous speech samples. Codings were independent codings of n=25 transcripts by two coders.

Composite Variable Construction

The data were reduced, and hence the data analysis simplified, by constructing four composite variables using the simple variables discussed above. Specifically, composite variables were constructed to reflect (a) amount of speech, (b) length of units, (c) syntax, and (d) speech acts.

The amount of speech variable is the sum of (a) the number of words in totally intelligible turns, (b) the number of intelligible words in pratically intelligible turns, (c) the total number of words, (d) the number of totally intelligible turns, and (e) the total number of turns. This five-item amount of speech scale, then, reflects how much a child said in terms of numbers of words and numbers of turns, with credit for intelligibility.

The length of unit variable is a "long unit" scale composed of (a) the number of three-word turns, (b) the number of turns longer than three words in length, (c) the number of words in the longest totally intelligible turn, (d) the mean length of the five longest totally intelligible turns, and (e) the mean length of the totally intelligible turns other than those consisting exclusively of _yes_, _no_, or an equivalent.

The syntax scale is composed of the number of _different_ (a) attribute and color terms, (b) action verbs, (c) status verbs, (d) qualifiers, (e) proforms other than pronouns, (f) pronouns, (g) categories of modulating devices, (h) temporal terms, and (i) locative terms. The categories of modulating devices are as follows: regular plural, irregular plural, indefinite article, definite article, demonstrative article, comparatives, reflexives, present progressives, regular past tense, irregular past tense, auxiliary have or be, negation, third person -s ending, future will, imperative, modal verb, relative pronoun, interrogative word order, and question word. These categories are discussed in detail in the coding manual appended to this report (Appendix F).

The speech acts scale consists of 16 items, with one point given for using any one of the 16 categories in the system. The categories are: Name, Attribute, Comment, Request Present, Request Absent, Request Information, Nonexistence, Rejection, Denial, Affirmation, Attention, Greet, Routine, Exclamation, Demonstrative, and Miscellaneous. Only speech acts coded as appropriate, nonimitative, and unprompted were counted for the purposes of this scale.

Scale Reliability

These composite variables or scales were evaluated using subprogram RELIABILITY in SPSS (Hull & Nie, 1981). The reliability coefficient, alpha, based on the Year 1 and Year 2 pretest data (n=48) was .83 for the amount of speech scale; .85 for the long unit scale; .89 for the syntax scale; and .80 for the speech acts scale. Guilford (1956) writes that: "In practice we expect reliability coeffients to be in the upper brackets of r values, usually .80 to .98" (p. 146). Consequently, reliability for these scales was acceptable.

Interrater Reliability for Composite Variables

The data used to assess agreement for the simple variables were reanalyzed for the composite variables. Interrater reliability for the amount of speech scale was .99; for the long unit scale, .99; and for the speech acts scale, .92. Intrarater reliability for the syntax scale was .99.

Summary

Background data were collected from school records and personnel on children's ages, diagnoses, families, and certain behavioral characteristics. Interrater agreement for the background variables involving judgments was examined by having two senior staff members independently rate the 24 children whom both knew well. Kappa (for categorical variables) and weighted Kappa (for scaled responses) showed acceptable agreement for most.

Spontaneous speech samples were tape-recorded, transcribed, and coded for a variety of variables reflecting amounts of speech, syntax, and speech acts. Interrater agreement for independent codings of 25 randomly selected transcripts by two coders was acceptable for all amount of speech and speech act variables. The coding of syntax was performed by a specialist coder; intrarater reliability was assessed in separate codings of 25 randomly selected transcripts. Acceptable agreement was demonstrated.

Data were reduced by constructing from the simple variables four composites: an amount of speech composite, a "long unit" composite, a syntax composite, and a speech act composite.

CHAPTER FIVE

GROUP RESULTS

The data presented in this chapter concern two groups of children: a group of 26 children observed once, given the language intervention program for a four-month interval, then observed again; and a contrast group of 22 children observed, then observed again at the end of a four-month interval without the language program. All children in both groups attended preschool or preschool level classes. Observations for all children consisted of (a) information on background variables concerning the family background, child behavior, and numerous other characteristics and (b) spontaneous speech samples collected, audiotape-recorded, transcribed, and coded, as discussed elsewhere in this report.

Background Characteristics

A small and statistically nonsignficant (p<.05) difference was observed in the average age of the groups. The mean age for the trained group at the start of training was 53.2 months (SD=8.7), and for the untrained group, 50.8 months (S=9.6). The trained group ranged in age from a minimum of 36 months to a maximum of 69 months; the untrained group, from a minimum of 32 months to a maximum of 72 months.

Diagnostic information was summarized by classifying diagnoses into five groups: (a) chromosomal abnormalities (Down's syndrome, mosaic Down's, Cornelia de Lange syndrome), (b) seizure disorders and major CNS involvement (known, not just suspected), (c) other disorders involving known organicity, (d) disorders involving autistic-like behaviors, and (e) all others (e.g., minor neurological damage suspected; unexplained language delay).

For these data, these categories were mutually exclusive, as, of course, might not be the case for the population as a whole; other data might show, for example, a child with both CNS involvement and autistic-like behaviors. No statistically significant differences ($p<.05$) emerged between the groups in diagnosis characterized in this way. Approximately 40% of the children in each group were diagnosed as "other," using this system.

No statistically significant ($p<.05$) differences were observed between the two groups with regard to most other child characteristics: race, sex, cognitive level, history of a hearing problem, presence of orthopedic handicaps, physical problems with the oral cavity that might impede speech production, articulation problems, a tendency to babble, chronic silence, problems with speech volume, reliance on nonverbal means of communication, shyness, loud assertiveness, or isolation. The trained group did show a significantly higher ($p<.05$) proportion of children than did the untrained group who were coded as likely to hit, punch, bite, or otherwise physically injure other people.

With regard to family background, no statistically significant ($p<.05$) differences emerged with regard to living situation (e.g., with both parents, one parent, etc.), exposure to languages other than English, family composition, birth order, or socioeconomic status. The groups did not differ significantly in the proportions of families coded as "down and out," nor in the presence of a parent with obviously subnormal cognitive ability. The groups did, however, differ significantly ($\underline{p}<.05$) in two important variables related to the family: All children with families coded as "very odd," as discussed elsewhere, were in the trained group. Furthermore, the groups differed in teachers' ratings of the quality of the home environment, whether notably neglectful or abusive; notably enriched or attentive; or neither. The trained group had a relatively high proportion of families rated as neglectful or abusive, none rated as notably enriched or attentive. In contrast, the untrained group has a relatively high proportion of attentive or enriched homes, and a low proportion of abusive or neglectful homes.

In short, with regard to background variables, the groups look similar with the exception of a few characteristics. The trained group emerges as more physically aggressive, more likely to come from a neglectful or abusive home environment, and less likely to come from an enriched or attentive home environment than the untrained group.

Preliminary analyses. Preliminary data analyses were aimed at identifying background variables to be taken into account in further analyses. For this exploratory purpose, gain scores on each of the four composite variables were used, and a one-way analysis of variance was conducted for each of four background variables that seemed probable sources of variance: sex, primary diagnosis, SES (socio-economic status) of the child's family, and cognitive level. In these analyses, the latter three background variables were collapsed into two categories. Diagnostic categories were: (1) the four categories of serious, identified disorders listed above and (2) others. SES categories were: (1) professional and white collar and (2) working class and lower class. The cognitive level categories were: (1) no or moderate cognitive delay and (2) very serious cognitive delay.

The results of these preliminary analyses are summarized in Table 5-1, which shows the correlation coefficient indicating the strength of the relationship between each background variable and the gain scores on each of the four dependent variables, and the significance level for the main effects of each background variable. A glance at Table 6-1 shows clearly that only the cognitive level variable need be included in subsequent analyses.

Table 5-1

Results of Preliminary Analyses: The Relationship Between Background Variables and Gain Scores on Composite Variables

Background Variable	Dependent Variable: Gain on Composite	r	Significance of F (1,46) for main effects of Background Variable
Sex			
	Amount of speech	.173	.244
	Long unit	.148	.322
	Syntax	.028	.852
	Speech Acts	.019	.897
Cognitive Level			
	Amount of speech	.272	.061
	Long unit	.309	.033
	Syntax	.225	.124
	Speech Acts	.029	.844
SES			
	Amount of speech	.109	.464
	Long unit	.123	.410
	Syntax	.277	.059
	Speech acts	.119	.427
Diagnosis			
	Amount of speech	.104	.482
	Long unit	.080	.590
	Syntax	.157	.287
	Speech acts	.124	.403

Inspection of Means

The trained group contained 9 children rated as having very serious cognitive delays; the untrained group, 13 such children. The pretest scores on the composite variables (see Tables 5-2, 5-3, 5-4, 5-5) show that the severely delayed children in the trained group were at a notably lower level with regard to amount of speech and syntax than were the comparable children in the untrained group. The adequacy of statistical control in this situation is open to question. In the ideal situation of experimental control, random assignment of subjects to the trained and untrained groups would be used. In the present case, the actual clinical comparability of the groups and the meaningfulness of statistical control in adjusting for the differences between the groups is questionable.

This difference between the trained and untrained groups of severely delayed children has three implications. First, the results presented here should be interpreted cautiously with regard to the seriously delayed children. Second, in future research on the impact of this language intervention program, blocking on cognitive level should be employed, with children in each cognitive level block randomly assigned to trained and untrained groups. Third, while reliability for rating cognitive level was very high, in future research such rating should be replaced or supplemented by other measures of cognitive level (e.g., intelligence tests), difficult though it is to find and administer tests appropriate for this population.

Visual inspection of the data presented in Tables 5-2 through 5-5 also reveals an obvious interaction between group (trained or untrained) and cognitive level. Specifically, the gains for the trained children compared to the untrained children are impressive within the children showing no or moderate cognitive delay, but not for the seriously delayed children.

Table 5-2

Observed Pretest and Posttest Means (Standard Deviations) on Amount of Speech Composite for Trained and Untrained Groups by Cognitive Level

	Cognitive Level			
	No or moderate delay		Severe delay	
Group	Pre	Post	Pre	Post
Trained	371.41 (169.78)	640.00 (272.54)	301.56 (196.79)	330.89 (183.73)
	n = 17		n = 9	
Untrained	369.56 (165.51)	363.33 (174.64)	341.54 (183.74)	385.62 (177.06)
	n = 9		n = 13	

Table 5-3

Observed Pretest and Posttest Means (Standard Deviations)
on Long Unit Composite for Trained and Untrained
Groups by Cognitive Level

	Cognitive Level			
Group	No or moderate delay		Severe delay	
	Pre	Post	Pre	Post
Trained	24.99	50.24	19.03	19.73
	(18.01)	(25.44)	(16.47)	(18.71)
	n = 17		n = 9	
Untrained	23.19	26.34	19.82	26.03
	(20.43)	(14.35)	(10.86)	(20.62)
	n = 9		n = 13	

Table 5-4

Observed Pretest and Posttest Means (Standard Deviations)
on Syntax Composite for Trained and Untrained Groups
by Cognitive Level

Group	Cognitive Level: No or moderate delay Pre	No or moderate delay Post	Severe delay Pre	Severe delay Post
Trained	28.65 (19.46)	45.18 (20.37)	9.00 (9.98)	17.56 (21.17)
	n = 17		n = 9	
Untrained	23.22 (16.90)	30.22 (16.51)	20.85 (16.25)	23.92 (11.18)
	n = 9		n = 13	

Table 5-5

Observed Pretest and Posttest Means (Standard Deviations) on Speech Act Composite for Trained and Untrained Groups by Cognitive Level

	Cognitive Level			
	No or moderate delay		Severe delay	
Group	Pre	Post	Pre	Post
Trained	7.12 (2.15)	8.71 (2.14)	5.33 (3.46)	7.00 (2.65)
	n = 17		n = 9	
Untrained	7.33 (2.45)	6.67 (2.65)	7.85 (3.34)	7.76 (2.95)
	n = 9		n = 13	

Univariate Analyses of Composite Variables

A univariate analysis of covariance using sequential sums of squares was conducted for each of the four posttest composite variables, with the pretest composite serving as the covariate. Two factors were included in these analyses: treatment (trained or untrained) and cognitive level (no or moderate delay and very severe delay). As noted above, inspection of the data focused interest on the differential impact of the treatment within the two levels of cognition. Specifically, the analyses were directed at answering the following questions: Did the intervention have an impact for children with no cognitive delay or moderate delay? Did it have an impact for children with very serious delay?

In interpreting the results presented in the remainder of this chapter, it is essential to bear in mind the meaning of the two levels of cognition. Specifically, "no or moderate delay" and "very serious delay" refer to apparent cognitive functioning as rated by observers; *"delay" does not mean language delay* in itself. By any ordinary clinical standards, all of the children were seriously language-delayed or disordered. The phrase "no or moderate delay" must not be taken to refer to mild *language* difficulties. All of these children had, as noted elsewhere, serious language problems.

Amount of Speech Composite

A two-way (treatment by cognition) analysis of covariance on posttest scores on the composite variabe representing amount of speech was conductd, with pretest scores on this variable as the covariate. The assumption of homogeneity of regression coefficients (regression parallelism) underlying the analysis of covariance was assessed by including a term in the model representing the group by covariate interaction (that is, a term composed of the treatment group by pretest interaction, the cognitive level by pretest interaction, and the three-way treatment group by cognitive level by pretest interaction). For the amount of speech composite, this term was not significant, hence the use of analysis of covariance is justified (_F_ 3,40=1.01725, _p_=.395).

The analysis of covariance with tests of the simple main effects of the intervention (Winer, 1971) is summarized in Table 5-6. As anticipated, cognition was highly signficant. Intervention was significant for children with no or moderate cognitive delay, but not for the children with very serious delays. As Table 5-2 shows, the trained children with no or moderate cognitive delay made substantial gains on this composite (from a mean pretest score of 371.41 to a mean posttest score of 640.00), while the untrained children at that cognitive level made no observable progress (with a mean pretest score of 369.56 and a mean posttest score of 363.33). In short, the intervention emerges as very successful in helping the children with no or moderate cognitive delay to increase the amount of speech they produced.

Table 5-6

Analysis of Covariance for Amount of Speech Composite,
Using Sequential Sums of Squares, with Tests of Simple Main Effects of Treatment

Source of Variation	Sum of Squares	df	Mean Square	F	Sig. of F
Within + Residual	1823397.57327	43	42404.59473		
Constant	10212997.52083	1	10212997.52083	240.84648	0.0
Covariate	352704.16197	1	352704.16197	8.31759	.006
Cognitive Level	304085.26434	1	304085.26434	7.17105	.010
Treatment within Cognitive Level 1-- No or moderate delay	447812.08311	1	447812.08311	10.56046	.002
Treatment within Cognitive Level 2-- Severe delay	7482.39648	1	7482.39648	.17645	.677

Long Unit Composite

A two-way (treatment by cognitive level) analysis of covariance on posttest scores on the composite variable representing the use of long conversational turns was conducted, with pretest scores on this variable as the covariate. The assumption of homogeneity of regression coefficients (regression parallelism) underlying the analysis of covariance was assessed by including a term in the model representing the group by covariable interaction. For this composite variable, this term was not significant, hence the use of analysis of covariance is justified (*F* 3,10=.06204, *p*=.980).

The analysis of covariance for this composite, with tests of the simple main effects of treatment (Winer, 1971) is summarized in Table 5-7. This analysis again confirms the impression gained from the visual inspection of the means: Cognitive level was a highly significant factor, and the treatment was significant for children with no or moderate delays, but not for children with very serious cognitive delays. As shown in Table 5-3, the trained children who had no or moderate cognitive delay roughly doubled their mean score in this index, while the untrained children made only a slight gain. For the severely delayed children, the trained group made virtually no gain, while the untrained group made a small gain. In short, the intervention was impressively effective in helping the children with no or moderate cognitive delay to use longer conversational turns.

Table 5-7

Analysis of Covariance for Long Turn Composite, Using Sequential Sums of Squares, with Tests of Simple Main Effects of Treatment

Source of Variation	Sum of Squares	df	Mean Square	F	Sig. of F
Within + Residual	15761.35153	43	366.54306		
Constant	53807.67405	1	53807.67405	146.79769	0.0
Covariate	5558.31103	1	5558.31103	15.16414	.000
Cognitive Level	2836.26266	1	2836.26266	7.73787	.008
Treatment within Cognitive Level 1-- No or moderate delay	3066.98825	1	3066.98825	8.36733	.006
Treatment within Cognitive Level 2-- Severe delay	181.58937	1	181.58937	.49541	.485

Table 5-8

Analysis of Covariance for Syntax Composite, Using Sequential Sums of Squares, with Tests of Simple Main Effects of Treatment

Source of Variation	Sum of Squares	df	Mean Square	F	Sig. of F
Within + Residual	10494.96651	43	244.06899		
Constant	47439.18750	1	47439.18750	194.36794	0.0
Covariate	6511.05256	1	6511.05256	26.67710	0.0
Cognitive Level	1738.04916	1	1738.04916	7.12114	.011
Treatment within Cognitive Level 1--No or moderate delay	849.65614	1	849.65614	3.48121	.069
Treatment within Cognitive Level 2--Severe delay	.08813	1	.08813	.00036	.985

Syntax Composite

An analysis of covariance similar to those described above was conducted for the composite variable composed of syntactic items. Again, the term used to test the assumption of homogeneity of regression coefficients was nonsignificant (F 3, 40=2.44958, p=.078). The analysis is summarized in Table 5-8. As the table shows, cognitive level was again a significant factor. Treatment was signficant (p=.05) for neither level of cognition, but fell just short of significance (p=.069) for the higher level children.

Speech Acts Composite

An analysis of covariance similar to those described above was conducted for the composite variable reflecting the number of different speech acts. The term used to test the assumption of homogeneity of regression coefficients was again nonsignficant (F 3,40=1.05306, p=.380).

The results of the analysis, however, differed from the now familiar pattern of a significant effect for cognitive level. As Table 5-9 shows, the cognitive level factor was nonsignificant, and, as was by now familiar, the treatment was significant for the higher level but not for the lower level children. (As discussed elsewhere, a cautious interpretation of this result is advised, since the nonsignificance of cognitive level for this variable and other considerations as well suggest that this system of measuring speech acts is somewhat insensitive for this population.)

Table 5-9

Analysis of Covariance for Speech Acts Composite,
Using Sequential Sums of Squares, with Tests of Simple Main Effects of Treatment

Source of Variation	Sum of Squares	df	Mean Square	F	Sig. of F
Within + Residual	236.33488	43	5.49616		
Constant	2883.00000	1	2883.00000	524.54804	0.0
Covariate	56.03031	1	56.03031	10.19445	.003
Cognitive Level	1.94467	1	1.94467	.35382	.555
Treatment within Cognitive Level 1-- No or moderate delay	26.47363	1	26.47363	4.81675	.034
Treatment within Cognitive Level 2-- Severe delay	.21650	1	.21650	.03939	.844

Multivariate Analysis of Composite Variables

In the analyses presented above, each composite variable is treated separately, and probability levels are calculated for separate measures. In those analyses, interest focuses on each composite apart from the others, hence the univariate approach is appropriate.

A different construal of the data is also of interest. Instead of construing the composites as different measures of different behaviors, one may construe them as multiple measures of the same behavior, namely, language performance. In that case, a multivariate approach (an approach using multiple dependent variables) is appropriate (Finn, 1974). In the multivariate approach, interdependencies in the measures are taken into account, and one finds a probability level for all four measures considered jointly (Bock, 1975).

In general, the model for group means used in fitting the data in the multivariate analysis of covariance is as follows:

$$Y. = K_o \Theta_o + K_h \Theta_h + X.B + E.^*$$

where $Y.$ represents the group means on the four posttest composite variables; $K_h \Theta_h$, the hypothesized treatment effects, $K_o \Theta_o$ design effects other than those hypothesized (i.e., cognitive level effects); $X.B$, regression effects (pretests); and $E.^*$, error.

As Bock (1975, p. 358) discusses, there are two main questions to be answered in fitting this model to the data: First, is the regression term needed? That is, do the covariables matter? Second, assuming that the regression term is required, are the hypothesized design effects needed? That is, are the other design effects (cognitive level) and the regression effects (covariables) sufficient, or is the term representing the hypthesized treatment effects needed, too? The first question is answered in the analysis of regression, and the second question is answered in the analysis of covariance.

Analysis of Regression

A multivariate multiple regression analysis showed that the inclusion of the covariables resulted in a significant ($p<.01$) reduction in error dispersion. The univariate F tests presented in Table 5-10 show that this reduction is significant ($p<.05$) for the long unit and syntax posttest composites separately and approaches significance for the other two composites. Consequently, the regression term (representing the covariables) is retained in the model, and the actual analysis of covariance can proceed.

Table 5-10

Analysis of Regression
Univariate F-Tests with (4,41) D.F.

Dependent Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F
Long Unit Composite	4786.48225	17510.92355	1196.62056	427.09570	2.80176	.038
Amount of Speech	440071.43068	1945421.01330	110017.85767	47449.29301	2.31864	.073
Syntax	5954.20201	9218.96232	1488.55050	224.85274	6.62011	.000
Speech Acts	67.84367	244.02711	16.96092	5.95188	2.84967	.036

Table 5-11

Four Composites: Multivariate Analysis of Covariance of Cognitive Level and of Treatment within Cognitive Levels Using Sequential Sums of Squares

Source of Variation	Wilks Lambda	Approx. Mult. F	Sig. of F	Averaged F	Sig. of F
Within Cells Regression	.35504	2.86662	.001		
Constant	.50934	8.91079	.000	8.03176	0.0
Cognition	.74654	3.14053	.025	7.88035	0.0
Treatment within Cognitive Level 1--No or moderate delay	.76182	2.89202	.035	11.22073	0.0
Treatment within Cognitive Level 2--Severe delay	.97587	.22873	.921	.08488	.987

Analysis of Covariance

The hypothesized effect in this analysis is the effect of the intervention within each of the two levels of cognition, and the cognition effect corresponds to what Bock refers to as a nonhypothesized or other effect in the design. Table 5-11 summarizes the results of this multivariate analysis of covariance. It should be noted that for the results shown in Table 5-11, the effect of cognition is adjusted for preceding effects, as are the two treatment-within-cognition effects. These two treatment-within-cognition effects, however, are orthogonal (i.e., the order of entering the two treatment-within-cognition terms does not matter).

The results presented in Table 5-11 show that for the children with no or moderate cognitive delay, the multivariate _F_ is highly significant, while for the children with very serious cognitive delays, the multivariate _F_ is nonsignificant. It should be recalled that the results of univariate and multivariate significance tests for the same data do not necessarily show this correspondence.

The adjusted estimate effects presented in Table 5-12 confirm the picture of the trained group as superior to the untrained within the higher cognitive level on each of the four variables. It should be noted that the univariate results presented in this context are not simply restatements of the univariate analyses presented previously: Here, each dependent variable is adjusted for all four pretest composite variables, while in the univariate analyses presented earlier, each was adjusted only for one of the pretests, the pretest corresponding to that posttest. For example, in the univariate analyses, the posttest syntax composite was adjusted for the pretest syntax composite. Here, the posttest syntax composite is adjusted for the pretest amount of speech, long unit, and speech act composites as well.

In short, when the four posttest composite variables (adjusted for the four pretest composite variables) are considered jointly, the difference between the posttest language performance of the trained and untrained groups is significant for the children with no or moderate cognitive delays, but not for those with very severe cognitive delays.

Summary

Data from spontaneous speech samples collected before and after a four-month interval from 26 children receiving the intervention and 26 contrast group children are presented. The groups were similar in most background characteristics; the group receiving the intervention contained more physically aggressive children, more from neglectful or abusive homes, and fewer from enriched or attentive homes than did the contrast group. Preliminary analyses identified cognitive level as an important factor to be taken into account in subsequent analyses.

Univariate two-way (treatment by cognitive level) analyses of covariance were conducted for each of the four composite variables, with the posttest score as dependent variable and the corresponding pretest score as the covariate. Within the higher cognitive level group (no and moderate cognitive delay), treatment was significant for the amount of speech, long unit and speech acts composites, and fell just short of significance for the syntax composite.

A multivariate two-way (treatment by cognitive level) analysis of covariance with the four posttest composites as dependent variables and the four pretest composites as covariates showed that treatment was significant for the children with no and moderate cognitive delay but not for the very seriously delayed children. Overall, the intervention emerges as effective for the children in the higher cognitive level group but not for the others. In interpreting the results, it is important to recall that level refers to apparent cognitive functioning, not to language; all children have serious language delays and disabilities.

Table 5-12

Adjusted Estimated Effects for the Model: Estimates and (SE)

	Amount	Long Unit	Syntax	Speech Acts
Constant	15.6685	211.9865	5.5163	4.8232
Cognition	6.9825*	68.6015*	6.5522**	.0737
	(3.1291)	(32.8977)	(2.3499)	(.3857)
Treatment within	11.8907**	144.9423**	7.1830*	1.0858*
cognition (1) - No or mod. delay	(4.1054)	(43.1620)	(3.0832)	(.5061)
Treatment within	-2.9195	-13.9880	-.3221	-.0500
cognition (2) - Very serious delay	(4.6334)	(48.7128)	(3.4797)	(.5711)

* p <.05

** p <.01

CHAPTER SIX

CASE I: GILLIAN

Previous chapters of this report describe the intervention program developed in this project and the assessment of its impact on subjects as a group. In this chapter and in the next one, we rapidly shift from that broad focus on the intervention and its impact in general to a close-up examination of cases.

The case presented in this chapter illustrates assessment and intervention with a seriously language-handicapped young child. Although the case itself is of some interest because of the etiology of the child's handicap, the purpose of this chapter is to provide a detailed example of assessment and intervention procedures.

Background

The case reported in this chapter is that of a child whom we shall call Gillian. Gillian, who was five years and three months old at the beginning of the work reported here, had been born with an encephalocele, which was excised at birth. Her hearing, tested recently, was normal. Her records also indicated that, in spite of the testing difficulties created by her severely delayed expressive language, her cognitive ability and language comprehension appeared to be within normal range. In brief, Gillian fit the classic picture of expressive aphasia of childhood.

The oldest of three children in a working-class family, Gillian had attended a mainstreamed preschool five mornings a week for one and one-half years. Consequently, she was exposed to many nonhandicapped peers who provided models of competent language use. During the school year in which the intervention took place, Gillian also received traditional speech therapy focused on articulation. In that therapy, seated so that she could look into a mirror, she was exhorted to copy the speech therapist's production of fricatives. The therapist also presented her with pictures of objects and attempted to elicit imitations of the therapist's labeling of the pictures.

In our first classroom observations, Gillian was very friendly and used nonverbal means of communication with great charm and surprising effectiveness. She pointed, tugged, gestured, and otherwise made her meaning known. Her efforts to communicate were accompanied by chattering (clicking and "tsking"), so that, from a distance, she gave the superficial and pathetic appearance of talking. In her relationships with adults and with the children in her mainstreamed preschool class, she was as successful as one could probably be without speaking. For example, she routinely participated in fantasy play. She did occasionally produce a word or two: She approximated Stop in order to protest children's actions. She sometimes produced /b/, often in reference to boxes, balls, and other objects, so that the sound could be interpreted as an approximation of a word. Aside from these approximations, she practically never used words in the classroom. An observer assigned to follow her in early February heard her say no intelligible words in an entire morning.

Spontaneous speech samples collected in January, discussed below with regard to the evaluation of Gillian's progress, confirmed the picture of a child eager to communicate but severely language-handicapped. For example, in play with an adult, Gillian took 75 conversational turns in a ten-minute sample, but only 9 of these turns were totally intelligible. Each of the 9 consisted of only one word. In play with a peer, she was very silent, taking only 8 turns, none intelligible.

Intervention Considerations

Gillian was obviously eager to communicate. Especially because of a suggestion that a malformation of the oral cavity might have been impeding her speech, an obvious strategy would have been to teach her sign language. The school rejected this idea forcefully, partly because the school, deeply commited to mainstreaming, argued that sign language alone would not help her to communicate with her peers and teachers at school. Furthermore, her family was not one that could easily support efforts to teach her to sign, and her mother wanted Gillian to talk. It seemed unlikely that signing would have been supported by either her school or her family.

An important consideration in the decision to try to help Gillian communicate verbally was the observation that she did, occasionally, produce comprehensible words: There was some evidence that she could potentially say more than she, in fact, usually did say.

Intervention Sessions

Gillian was seen in two quite different contexts for language intervention sessions: (a) individually with an adult and (b) with an adult and a language-handicapped child who had formed a friendship with Gillian and who talked considerably more than she did.

Gillian received a total of 26 intervention sessions, beginning in February and ending in May. Of these sessions, 23 were tape recorded and are discussed here. Sessions lasted between 20 and 45 minutes.

Because Gillian's language difficulties seemed to be exclusively expressive, she was exposed mainly to games targeted at her expressive needs; work was devoted to the crucial problem of helping her to begin talking, rather than to the less pressing problem of helping her to refine her satisfactory comprehension skills. Of the communication game formats described in Chapter Two, those used most frequently in work with Gillian were the Hiding Game, Communicative Lotto, and Picture-Toy Matching formats.

From February through early April, the games used were the simplest available. The content of these games included names of familiar places and activities in the school; colors; shapes; and names of familiar people. In late April, a new series of games was devised, based on the sounds Gillian had been heard to produce. The content of these games was dictated by words she seemed likely to be able to pronounce, rather than by cognitive or motivational considerations, although the games were kept relatively simple and interesting. These new game materials illustrated words containing stop consonants and not containing certain sounds she seemed unable to produce at all (e.g., fricatives). Words containing "unpronounceable" sounds were included if approximations of the words seemed possible for Gillian, and if these approximations were apt to be communicatively effective in spite of articulatory problems (e.g., blue was included, since the approximation was comprehensible). In effect, the investigators took over for Gillian the task of searching the English language for words that she might be able to say, and selected words referring to objects that might interest her. These games included many designed to elicit two-term grammatical constructions.

Evaluation Procedures

The assessment of Gillian's language was based on informal observations in her classroom and on audio tape-recorded samples of her spontaneous speech in two different situations: in play with (a) a familiar adult, a special needs teacher at her school, and (b) a peer. In both situations, the participants played with a variety of toys and materials (e.g., construction paper and stickers). The first ten minutes of each of these sessions (starting with Gillian's first conversational turn) was transcribed. Transcripts were checked by a project staff member. This procedure was used in January of 1980, just before the intervention began, and was repeated in May, at the end of the intervention. Language intervention sessions were similarly recorded and transcribed. Transcribing and coding procedures were those described in Chapter Five of this report.

A follow-up was conducted one year after the intervention ended.

Evaluation Results

The results presented here concern (a) data collected during the language intervention sessions; (b) data collected in January and again in May in the conversational settings described above, playing with a familiar adult and with a peer; and (c) follow-up data collected one year after the end of the intervention.

Intervention Sessions

As noted previously, Gillian was a "conversational" child when first observed, in the sense that she tried to communicate with people, tugged, pointed, and emitted various unintelligible sounds. Although silent in the sense that she seldom produced intelligible words, she was often conversationally active. For instance, in the first training session, with an investigator and another child present, she took 34 conversational turns in the 10 minutes transcribed, although not one turn was even partially intelligible. Throughout the language intervention period (February through May), Gillian continued to take a fairly large number of conversational turns. The mean number of turns per 10-minute samples of sessions remained relatively constant for the first three months: 37.6 turns in February, 35.9 in March, and 35.4 in April. In May, the mean number of turns increased, to 58.3 turns per 10-minutes. The mean number of unintelligible turns was 26.8 for February, 21.4 for March, 17.2 for April, and 28.5 for May. A change, however, took place in the quality of these unintelligible turns. Namely, the unintelligible sounds were at first clicks and "tsks," but gradually became more like incomprehensible words than like totally nonverbal noises.

While Gillian continued to take conversational turns at a rather high rate, the number of turns containing intelligible words showed an increase. The mean number of turns containing any intelligible words per 10-minute sample was 10.8 turns for February, 14.4 for March, 18.2 for April, and 17.7 for May. The major improvement, however, was in the number of totally intelligible turns: The mean number of totally intelligible turns per 10-minutes was 1.6 turns in February, 1.9 in March, 12.8 in April, and 10.2 in May.

Gillian's progress was also evident in the number of words she spoke. In February, the 10-minute samples showed an average of 11.2 words per 10 minutes; in March, 15.6 words; in April, 23.4 words; and in May, 22.0 words. That is, the mean number of words roughly doubled during the intervention.

During the early sessions with Gillian, the few intelligible turns were mainly one word in length. As she began to talk more, she began to take more totally intelligible turns longer than one word as well. The mean number of totally intelligible conversational turns longer than one word was 0.4 for February, 0.4 for March, but 7.4 for April and 4.0 for May.

Change in content. As noted previously, one-to-one work with Gillian may be divided into two phases, before and after the introduction of games designed to help Gillian produce words that seemed relatively easy for her to pronounce. There were 6 tape recorded one-to-one sessions with her individual therapist (S.C.) before the use of these special games, and 6 comparable sessions after. The sessions before the use of these games took place from the beginning of February until the end of March, while the sessions after the introduction of the games took place from the end of April until the end of May. That is, the sessions before the use of these games covered a considerably longer time period than those after the introduction of the games.

Table 6-1 presents the mean per session, standard deviation, maximum, and minimum for three measures of how much Gillian talked before and after the change in the games. These data showed a dramatic increase after this change.

Table 6-1

Amount of Speech in Ten-Minute Samples Before and After Change in Game Content: Individual Sessions

Measure	Six Sessions Before Change	Six Sessions After Change
Total number of words		
Mean per session	19.17	45.83
S.D.	10.57	12.55
Minimum	3	27
Maximum	32	57
Total number of turns		
Mean per session	46.7	63.8
S.D.	19.9	18.3
Minimum	18	45
Maximum	71	96
Total number of totally intelligible turns		
Mean per session	2.8	17.8
S.D.	2.9	8.6
Minimum	0	5
Maximum	7	28

Conversational Settings

Although Gillian took fewer conversational turns in the May sample with the familiar adult than in the January sample (75 turns in January, 47 in May), she produced more words in the May sample (49) than in the comparable January sample (29), and more turns were totally intelligible in May (12) than in January (9). While her longest conversational turn in January was one word in length, the longest in May was 5 words. In January she took no totally intelligible turns longer than one word in length, but in May, 6.

Gillian's speech with the adult in January showed a very limited range in terms of syntax and semantics. Her words were mainly nouns: She used proper names a few times, named pieces of clothing, and used miscellaneous other nouns. She used one action verb (pull) three times. She used the term up once. She used no two-term grammatical combinations.

In May, she continued to use nouns, but also counted from one to five in a meaningful way (i.e., did not simply recite the numbers, but referred to numbers of objects). She used four different verbs (hurt, look, push, do), the proform that, and the pronouns I and it. Besides producing up, she also produced down. She had also begun to combine words: She produced noun-verb constructions 7 times (e.g., "bunny hurt," "I do") and once produced the 3-term "I do it." (Note that these constructions were sometimes used in partially intelligible turns.)

With regard to pragmatic functions, Gillian's use of language in the January session was very restricted. Her utterances were heavily concentrated in the Name category. In May, she continued to provide labels for people and objects; she also said things about objects, requested present objects, and used language for several other functions.

That is, not only was Gillian producing more words, she was also increasing the kinds of words she produced. She was beginning to combine words, and she was expanding the range of functions for which she used words.

Play with a Peer

The children participating in the project generally produced considerably less speech when playing with peers than when playing with an adult. This is not surprising since the adults deliberately tried to elicit speech, to elicit clear speech, and so forth. Furthermore, when the child played with the adult, only two people were present, hence the opportunity to talk was greater. That Gillian said little when playing with a peer is consequently to be expected.

During the January sample with a peer, Gillian was very silent, taking only 8 conversational turns, none intelligible. In May, she took 26 turns, with 3 totally intelligible. In January, she produced 9 words; in May, 11. Her speech in these sessions was sparse and poor in comparison to her speech with the familiar adult, but some improvement is suggested. To move from taking no totally intelligible turns to taking 3 is a meaningful change, far more meaningful than a change of 3 turns would be if the child moved from, say, 20 to 23 totally intelligible turns.

Some change was evident in semantics and syntax. In January, she produced or approximated two verbs (look, stop), the proform that, and the article the (with the noun following unintelligible). She used no word combinations. In May, she used some nouns (e.g., nouns for animals represented on the stickers with which the children were playing), the verb do, the proform that (an approximation), the recurrence form too, and the pronoun I. She combined words once, to form the noun-verb construction I do. In both samples with the peer, she used words for a very limited range of pragmatic functions, mainly to request objects.

Gillian's progress was evident in different ways in the two conversational contexts. With the adult, Gillian was initially quite conversational. Her progress was in combining words and in increasing the length of her contributions. With her peer, she was initially very silent (8 conversational turns in 10 minutes is remarkably small even for a language-delayed child). Her progress in that situation was mainly limited to performing the basic conversational function of taking a turn with greater frequency, although some positive change was evident.

School and Home Comments

By early May, both Gillian's mother and classroom teacher commented enthusiastically about her progress. The mother reported that Gillian was talking at home. The teacher reported that for the first time, Gillian attempted to make a contribution during the class's "circle time." While her speech was still sparse, and often unintelligible, it was clear that she had begun to talk in earnest.

Follow-up

During the next school year, Gillian attended a small public school class for language-handicapped and hearing-impaired children. Her classroom teacher developed a strong attachment to Gillian and engaged in frequent conversation with her. The structured language work provided in the classroom consisted mainly of exercises in which the teacher showed Gillian pictures and asked her to label them. Some showed objects, others showed people performing actions. There was a heavy emphasis on eliciting imitations of model sentences. In speech therapy, Gillian was given lists of nonsense syllables to imitate.

During the following May, one year after our work with Gillian had ended, a tape-recorded sample of her speech was collected while she was interacting with her classroom teacher and with the investigator who had worked with her individually during the previous year. In this sample, the conversation was about some photographs of Gillian, the clothes she was wearing, the other children in her class, and the jewelry the adults were wearing, topics mainly raised by Gillian. The two adults directed their talk to Gillian and took turns speaking with her. This data collection situation hence differed from the situations in which earlier data was collected. Consequently, follow-up results should be interpreted with caution. It was the investigator's impression that this sample, if anything, overrepresented the skill with which Gillian used language in the entire morning of the follow-up visit.

In the ten-minute sample of this pleasant conversation, Gillian took many conversational turns (106), considerably more than in the sample of her speech with a familiar adult a year earlier. She also produced a rather large number of words (73) in the ten-minute sample. The longest turn in this sample was 3 words, a drop from the previous year. The mean length of intelligible turns dropped from 2.0 to 1.6. The number of conversational turns longer than one word was exactly the same as in the previous sample, 6 turns. In short, Gillian was taking many more conversational turns and using words more frequently, but the length of turns had dropped from what it had been a year earlier. She had not, however, reverted to the exclusive use of one-word turns.

Gillian continued to use a few nouns. She had markedly improved her pronunciation of her full name and her approximation of Mommy. She produced or approximated the numbers one, two, and three in counting and approximated the word blue. She produced or approximated four different verbs (hold, go, do, and a partially intelligible take) and approximations of here, that, it, and I, all of which she had used in the previous year.

Gillian's use of grammatical constructions was limited almost exclusively to one pattern that had emerged a year previously, namely, utterances of the form: I + Verb (+ optional object), for example, I hold it, I hold, I do, I go, I do that, and I take home. The one construction not fitting this pattern was Here dat. Noun + verb constructions, like bunny hurt of the previous year, were not evident. The acceleration in her grammatical development that began during the intervention period had not continued. Rather, one construction had become routinized.

The most striking feature of the distribution of utterances in the categories of pragmatic functions was an increased use of the "Attribute" category, together with a drop in the more complex "Comment" category. It seems clear that the syntactic growth during the intervention was related to the increase in her use of Comments, and that the disappearance of these kinds of constructions was also related to the drop in the frequency of these speech acts during the follow-up period. Gillian's use of categories other than Name, Attribute, and Comment also dropped nearly to its original low level. Specifically, only one utterance fell in another category (4.4% of utterances in the follow-up sample), and that was a request for something in the present. In contrast, 20.7% of her utterances in the sample a year earlier fell in that category.

Gillian had made progress in that she talked more often than she had previously. Her syntactic and pragmatic development, however, seemed to have slowed down greatly. While she continued to hold some of the gains she had made, in the sense that she was not speaking exclusively in one-word utterances and was not limiting her speech acts mainly to naming, her grammatical development seemed limited to an increasing use of one stereotyped pattern. Her beginning use of the complicated Comment type of speech act had decreased in frequency.

Discussion of Results

Gillian's progress during the intervention is particularly notable because at the beginning of the intervention period, she was relatively old yet speaking very little. In effect, the need for baseline data is less important with such a child than is usually the case; it seems unlikely that a five-year-old speaking as little as Gillian originally did would show this kind of progress without intervention. The dramatic change documented following the change in game content also suggests that the intervention was successful, at least according to the criterion of how much the child talks (see Allen, 1980).

During the intervention, Gillian began to combine words in meangingful ways and to use words to serve pragmatic functions other than naming things. When the intervention ended and she was placed in a traditional special needs classroom, she continued in her efforts to communicate with people, but her progress in syntactic and pragmatic skills ceased. In particular, the syntactic drills used in the traditional classroom (elicited imitations of sentences like The boy is swimming in response to the adult model plus a photograph) clearly did not lead to her spontaneous production of sentences even remotely approximating this form. In contrast, the intervention based on pragmatics seems to have helped her to produce spontaneously utterances like Bunny hurt. In other words, the intervention based on pragmatics was associated with progress in all areas of expressive language.

Conclusion

The application of the theory of pragmatics to language intervention with young children is a challenging endeavor, in part because pragmatics itself is an elusive topic.

Modern use of the term pragmatics stems from Morris's (1938) theory of semiosis, the process by which something functions as a sign. For Morris, pragmatics is the relationship of signs to interpreters, the conditions under which terms are used. While traditional conceptions of pragmatics begin with forms, then proceed to relate forms to functions, recent work emphasizes use as central rather than peripheral. To give one example, for Haberland and Mey (1977), pragmatics *is* "the science of language use" (p. 1), although "doing pragmatics [still] means studying sign systems with respect to user relations" (p. 2). This change in conception is related to a major shift in perspective on meaning. If, on the whole, studying meaning is studying linguistic forms, then speaker use is of peripheral concern. Alternatively, if "a meaning of a word is a kind of employment of it" (Wittgenstein, 1969, 10e), or if one sees reference as someting speakers use sentences to achieve rather than as something sentences do (Strawson, 1950), then speakers' use of linguistic forms is central.

Since pragmatics is concerned with the relationship between linguistic forms and speaker use of these forms in context, it is neither the study of linguistic forms without regard to the functions they serve, nor is it the study of social interaction without regard to linguistic means for effecting it. As Hymes (1974) writes, "Studies of social contexts and the functions of communication if divorced from the means that serve them, are as little to the purpose as are studies of communicative means, if divorced from the contexts and functions they serve" (p. 5).

According to this conception of pragmatics, language assessment and intervention based on pragmatics focuses neither on communicative means apart from context and function, nor on context and function apart from particular means. Rather, procedures based on pragmatics consider the effectiveness and contextual appropriateness of the child's use of language to perform a variety of communicative functions.

With regard to assessment, Muma and Pierce (1981) have argued that "descriptive procedures provide a much more appropriate (relevant, precise) means of assessing verbal behavior and documenting the effects of intervention" than do psychometric procedures (p. 10). Seibert and Oller (1981) have stressed the importance of evaluating verbal and nonverbal communicative effectiveness in natural settings. With regard to intervention, there is general agreement that the goal of language intervention based on pragmatics is to facilitate the child's plentiful, effective, and contextually appropriate use of language in performing a variety of communicative functions, but there is some disagreement about strategies for achieving this goal. For example, Hubbell (1977) advocates the use of unstructured procedures, and Miller (1978) describes a program and presents a case illustrating the use of intervention strategies in unstructured settings. In contrast, while Seibert and Oller (1981) also emphasize the facilitation rather than training of communicative behavior and the avoidance of exclusive attention to syntax and semantics, they do not entirely dismiss structured procedures. Structured procedures compatible with the pragmatic approach, however, differ from the procedures common in traditional intervention, as the case of Gillian illustrates.

The translation of these recommendations into actual clinical practice involves at least three potential hazards. First, recommendations for descriptive assessment may be misunderstood as suggestions that casual impressions replace tests. Obviously, nothing in the theory of pragmatics supports such a suggestion. The case presented here demonstrates one of many ways to gather descriptive information and to do so in a systematic way.

Second, while traditional procedures are faulted for excessive attention to linguistic forms apart from communicative functions, what are now new procedures may eventually be faulted for excessive attention to communication without regard to linguistic means for achieving it. A particular clinical pitfall is overvaluing nonverbal communicative effectiveness. While traditional approaches to language assessment and intervention overlooked the communicative effectiveness of children like Gillian, new approaches should not underrate the extent to which a child like Gillian is severely disabled despite nonverbal communicative effectiveness.

Third, current recommendations often stress the avoidance of many traditional intervention practices and the cultivation of conversational interchange in natural settings. These recommendations may easily be misinterpreted as recommendations to do nothing special, a misinterpretation likely to result in nonintervention with needy children. The data presented here show that applying pragmatics need not mean abandoning structured teaching; indeed, the results suggest that it should not.

Summary

A case presentation illustrates the use of the intervention program developed in this project. The child whose case is presented, a 5-year-old girl born with an encephalocele, showed a marked delay in the development of expressive language. Results obtained from spontaneous speech samples collected in intervention settings and in naturalistic settings pre- and post-intervention show gains in the amount the child talked and in syntactic and pragmatic aspects of her language. A one year follow-up suggests that she had continued to make gains in the amount spoken but not in other areas.

CHAPTER SEVEN

CASE II: GINO

The background material concerning the child whose case is presented in this chapter will sound familiar to anyone who has worked with young language-delayed children. Unlike Gillian, whose case appears in the previous chapter, this child showed strikingly delayed language, yet there was no indication of the cause of the language delay. The absence of a clear diagnosis and the presence of cultural-familial factors probably contributing to the delay make Gino's case representative of large numbers of language-delayed children. As this chapter shows, however, individualization of the program for Gino involved adjustments to his unique, individual characteristics.

Gino was a large, robust, handsome boy, first observed at the age of five years, four months. The youngest child in his family, Gino had three older brothers and one older sister. The family was of Italian origin, and the father was reported to speak Italian, although it was unclear whether or not Gino was actually exposed to Italian at home. The ambiguity in the records about the family's use of Italian was merely one of many ambiguities. The family seemed to be boisterous and to have a highly disorganized system for presenting themselves. While some reports in Gino's record stated that the father could not speak English, other reports made it clear that this was not the case. In the reports indicating that the father did not speak English, the sister Lisa was reported to serve as a translator. Our contacts with the family suggested that, while the parents could speak English, the sister Lisa was the family member most skilled at dealing with the world outside the family. She seemed to serve as a translator in the sense that all communication between the family and the outside world went through Lisa, but the family's communication problems seemed not to be based on problems with English.

Two of Gino's three older brothers had attended the school where we observed Gino. These brothers were described by the school staff as having problems similar to Gino's but considerably milder. Gino's records showed no evidence of any medical problems; he appeared, in fact, to be strong and healthy. Although he was a somewhat clumsy child, there was no indication of any neurological damage. His hearing had been tested and was reported to be normal. His ability to hear ordinary conversational speech seemed to us to be entirely normal. The diagnostic picture conveyed by Gino's record, a picture that meshed with our impressions, was of a child with mild to moderate cognitive delay and a notable delay in the area of language, probably attributable to cultural-familial factors.

Our first, informal observations of Gino took place in his classroom. He was completely silent in ordinary classroom situations. When we attempted to converse with him, he was initially very shy about speaking. The few words he spoke were labels for toys (e.g., "plane"). The initial shyness soon faded, and it was clear that Gino liked the attention offered by adults. In his interaction with the other chidren in his mainstream class, Gino often functioned as an interested bystander; he seemed to enjoy observing other children's play rather than actively participating himself. For example, he often sat at a table silently watching other children do puzzles.

Initial Speech Samples

Gino was tape recorded for ten minutes while playing with a familar adult (a special needs teacher at the school) and for ten minute while playing with another child.

The adult raised a number of conversational topics and used a variety of materials while playing with Gino. She asked about the clothes he was wearing, a Snoopy toy that he was manipulating, and the people and pets at his house. Gino was considerably more talkative in this situation that he had been in the classroom, taking 120 conversational turns and speaking 128 words in the ten minutes. His language, however, was very impoverished in the sense that he relied almost exclusively on one-word turns and one-word utterances. Of the 101 totally intelligible turns he took, 85.1% (96) were one word in length. His MLU for 50 utterances was just over 1.0 when the unanalyzed routine discussed below scored as one morpheme.

A striking feature of Gino's talk with the adult was his reliance on the routinized use of I don't know as a means of responding. He used this routine 18 times in the ten minutes, when responding to questions like "What color is the roof?" "Now where is he sleeping?" "Why do we have teeth?" Many of Gino's other responses were yes-no responses. Gino's use of these responses often indicated incomprehension of the questions he was asked. For example, when asked, "Do people eat dog food?" he replied: "Yeah" in a way that suggested the issuing of an agreeable response rather than a response to the content of the question. Other responses also showed evident incomprehension of even simple questions (e.g., "And what's your sister's name?" "Enzio"; "What's your sister's name?" "Uh, my daddy.")

Gino produced some familiar nouns and a few adjectives. The two times he produced verbs, other than in the "I don't know" routine, he spontaneously repeated the adult. She explained the tape recorder to him stating: "It makes a copy of what we're saying," and he repeated: "Saying." While playing with the Snoopy toy, she said: "When he's hungry, he can bark," and Gino said: "Bark."

In spite of Gino's evident difficulties in comprehending even simple statements and questions and in spite of his very limited production, his interest in communicating was clear during this play session. Limited as his responses were, they were nevertheless relatively plentiful. He obviously liked engaging in conversation, and he was willing to follow topics of conversation to the extent that he was able to do so.

Gino's speech was also recorded while he and another boy his age played with a variety of stickers (gummed seals) and some small animal toys. The other child, a boy with fetal alcohol syndrome, was extremely active and dominated the ten-minute play session. Gino did, however, show some linguistic capacities during this session that had not been otherwise evident. Specifically, when the project staff member supervising the children asked Gino what had happened to his sticker, he replied: "Ripped it," the first time we had heard him spontaneously produce a verb. In his eagerness to have more stickers, he also said clearly: "Give me other one." In addition, he used words occasionally to lay claim to stickers: "Hockey, my hockey" (to claim a sticker showing a hockey player) and "All mine."

In both of these sessions, Gino was very friendly and agreeable. He readily became interested in anything one provided for him. For example, the stickers obviously delighted him, and he quickly focused on the kinds of stickers he particularly liked. When he really wanted to gain or to keep the stickers he liked, he tried to use language to communicate his wants.

Summary of Needs/Work Plan

Gino's chronic silence in the classroom and his almost exclusive reliance on one-word utterances and one-word conversational turns, as well as other features of his language development, were obviously far below the norms for a five-year-old. His general cognitive delay set limits on the activities that would be appropriate for him, but his positive affect, eagerness to communicate, and ready interest in people and objects were clear strengths. With regard to language comprehension, it seemed that Gino was adept at listening for affective and attentional aspects of messages rather than for propositional content. For example, when asked a question, he seemed to understand that he was being addressed, that a question was being asked, and that a response was expected. Often, however, he seemed not to grasp the referential content of the question. One goal, then, was to help him to listen for specific content. With regard to language production, Gino had many needs. His expressive vocabulary was small, and he relied almost exclusively on one-word utterances and one-word conversational turns. Consequently, Level I games were appropri ate for building his vocabularly, and Level II games for helping him to encode more than one piece of information in a conversational turn or in an utterance. Because the communication games provide many different formats and content for working toward these goals, our first task was to discover the formats and content most appealing to Gino.

Intervention

Gino was seen a total of 30 times for language intervention sessions, beginning in early February and ending in mid-May, at the close of school. These sessions lasted for 20 to 30 minutes each. In 17 training sessions, he worked without another child present, and in 13 sessions he worked with another child. One session took place in his classroom, and one outdoors during recess. The remaining sessions took place outside the classroom, in a large hall where special needs teachers worked at this school.

The first few sessions were spent in an attempt to discover appropriate formats and materials for Gino. Although he was happy to play with almost any materials and willing to use most formats, he expressed great delight with the Hiding Game format and was enchanted with instant photographs, especially photographs of himself and of familiar scenes in the school (e.g., children riding bikes, putting on coats, having snacks).

The most striking feature of these early sessions was Gino's production of utterances used to control the action of games. By the fifth session (mid-February), he was issuing orders about the play of a Hiding Game: "Open eyes," "You close eyes," "Close your eyes," and "Me look," for example. For Gino, these were long utterances. The nonstereotyped quality of these utterances is evident in the syntactic variation observable in the above examples; Gino had not simply copied one and only one formula for marking different rounds of the game, but rather, had learned alternative ways of issuing the same message (e.g., "You close eyes" and "Close your eyes"). Throughout the time we worked with Gino, he continued to develop his ability to issue these kinds of commands. In mid-March for instance, he told a therapist, "Me close eyes, too," and later in that session, "Me close my eyes, too."

Gino's ability to use language to lay claim to possessions and request materials had been evident in January when he was observed playing with a peer. The games provided Gino with a context for developing that ability. For example, in late February, he claimed a picture as follows: "That my doggie, not your doggie. That my doggie, not your doggie. No. Mine [unintelligible], no, my doggie."

We occasionally sent instant photographs home with Gino and, during April vacation, sent home a series of photographs suitable for a Hiding game, together with instructions for playing the game. Gino's discovery that some photographs could be taken home prompted him to request further photographs, at first simply by saying, "Home." By early May, he was quite adept at making this kind of request, as is evident in the following examples: "Where's my picture?" and "I want my picture. Me. Gino." He directed the therapist to find a photograph that was inside an envelope by saying: "My picture. Inside."

Throughout the course of work with Gino, his agreeable disposition and sociability were both assets and problems. He seemed to thrive on changes in games; his ability to attend to any one set of materials was quite limited, so many different materials were used. Hiding games, his favorite, were played with Sesame Street finger puppets, photographs of familiar places in the school, photographs of children in the school engaged in familiar activities, and photographs of himself and his peers in different places performing various actions. We also played occasional Lotto games using sets of instant photographs and played Color Bingo games. In addition, we used Picture-Toy matching games (a black cat, a white cat, or a horse, riding in or pushing a fire engine or wagon; a Superman and cowboy game with various pieces of furniture). The Hiding games played with photographs of himself and his peers were his favorites and were particularly helpful in eliciting verbs. For example, Gino instructed the trainer to look under pictures in a Hiding game by saying: "Me. Building. Yeah, really," "Building at the park," and "Drink water. Me." (Mid-March).

Photographs of himself and of familiar objects (e.g., dogs) often stimulated Gino to tell us about events that had taken place at home. Gino's increasing ability to listen for the propositional content of questions was evident when we questioned him about these reports. For example, when asked what he had done during April vacation, he replied: "Picture home." When asked: "You mean the pictures that we took in school?" he replied: "No. Home. Home," and then made it clear that his brother Richie had taken pictures:

"Richie picture home. Richie picture home. Home...Richie took."

Gino's sociability influenced the course of work in several ways. First, he enjoyed content that was laden with affective meaning: photographs of himself, his friends, and things like dogs that had meaning for him in his daily life. Second, he enjoyed working with other children; roughly half of the sessions with Gino took place with another child present. Third, his friendliness made him a resource for other children who had difficulty in relating to peers. During sessions with language-disabled peers, Gino's enthusiasm and his mastery of the simple rules of the games were helpful to these children. This variation in the composition of the players was also helpful to Gino in providing him with the change that seemed necessary to hold his attention.

Our work with Gino ended when school closed at the end of May. Gino's parents decided to remove him from the school, evidently because this school was far from the town where he lived. This family has not kept in touch with the school. The school has been informed that Gino is now in a program but does not have information about which program he attends.

Progress

A comparison of the speech samples collected in January and in May reveals many areas of improvement in Gino's language. In the January session with the adult, Gino spoke 128 words; in May, 256 words. In the January sample, 95.1% of his total intelligible conversational turns were one-word turns or the routine "I don't know"; 4.9% were two-word turns; and none were longer. In May, 67.1% were one-word turns; 17.1%, two-word turns; 9.2%, three-word turns; and 6.6%, turns longer than three words. In the January sample in which Gino played with an assertive peer, he spoke only 64 words; in May, he managed to hold the floor more successfully in spite of the child's assertiveness, speaking 139 words in the ten minutes.

A dramatic change was evident in Gino's syntax. His MLU in January, based on the sample with the adult, was 1.0 morphemes; in May, 1.6. (The "I don't know" routine was scored as one morpheme.)

Gino's few syntactic constructions in the two January samples expressed a limited range of semantic relations. He produced the modifier-noun combination "My daddy" and a few modifier-proform combinations like "Horsey one" and "Donkey one." He produced the tense-marked action-object construction "Ripped it." Only one relatively advanced utterance was heard in the two January samples: "Give me other one." In these January samples, he produced only 7 different action verbs, using an action verb a total of 9 times. The only status verb he produced was in the routine "I don't know." His pronouns were limited to the first-person. The only term he used that even suggested the encoding of information about spatial relationships was a repetition of the adult's utterance of inside.

In May, Gino produced a variety of two-term constructions expressing different semantic relations: Agent-action constructions like Richie eat, Me hold, Me like, and You go; action-object constructions like Catch fish, Cook it, and Eat fish; agent-object constructions like Danny bike; locatives like under water and at home; and modifier-noun combinations like little baby and four wheel. More complex constructions were evident in utterances like the following: Me have a birthday, Me like these, Bite me two time (a report of what a worm did), Eat up my finger (another report), and You want cat? (the latter was an offer of a kitten to the adult conversant).

Gino's increased syntactic ability was also evident in his use of verbs. He produced an action verb 34 times in the two May samples, using 16 different action verbs (e.g., eat, go, live, bite, cut, bleed). He used the status verbs need, want, and have five times. He produced the pronouns you and it as well as first-person pronouns. He occasionally used irregular past tense inflections (found and did) and even produced a relative pronoun (in kid who live). While Gino's grammar remained far below the norms for his age (e.g. Me hold, absence of most plural endings), his progress from January to May was unmistakable.

Several important changes were also observed in Gino's use of language to serve different pragmatic functions. The most striking changes were observable in utterances scored as "Comments," the most advanced category in the scoring system (Dale, 1980). These utterances are verbal comments that go beyond the immediately perceptible, for example, words associated with objects; possessives; customary locations. In the January sample in which Gino played with the adult, 29.3% of his utterances were "Comments"; in May, 33.6%. In January, of the 31 utterances scored as "Comments," 19.4% were spontaneous imitations of the adult's immediately preceding utterance. Only one "Comment" was a reference to past or future time. In the equivalent May sample, Gino produced 41 comments, 46.3% of which were references to the past or the future, none of which were imitative. Specifically, Gino told anecdotes about events that had taken place at home.

In the January sample of Gino's speech while playing with a peer, only 12.0% of Gino's utterances were "Comments"; in May, 36.4%. In January, none of these contained references to the past or future, while in May, two did so. In short, in the adult sample, Gino had begun to use "Comments" in a complex way, while in the samples with a peer, he had begun to use this complicated category much more often.

Discussion

It is clear that Gino's language improved considerably while he received the language intervention. Specifically, he began as a child speaking mainly one word at a time and emerged as a child combining words. In evaluating the changes in Gino's use of language, one must consider his age: He was five years, four months old at the beginning of the language training. A spontaneous improvement like that observed would not be surprising in a much younger child, especially in a child with greater cognitive capacity than Gino displayed. It seems unlikely, however, that the striking improvement observed in Gino's language would have occurred in a five-year-old developmentally delayed child without intervention.

This case also illustrates two points about this intervention program. First, Gino's rapid acquisition of language useful in directing the game-playing process illustrates the way in which this intervention teaches implicit as well as explicit linguistic content, as discussed in Volume II of this report. While the explicit content of the games Gino played was mainly content related to expanding the grammatical complexity of his utterances, Gino produced and comprehended turn-taking and rule-related directions that were not tied to any particular game materials or to specific grammatical constructions on which particular games focused.

Second, the case highlights the shift in values that accompanies the transition from traditional to communicative or conversational language intervention. Gino's case is a particularly noteworthy example because his expressive language was so heavily laden with features that have been targets of traditional intervention procedures. His pervasive use of _me_ when _I_ is obligatory; his use of single nouns instead of "This is a ..." labels; his production of _other_ when _another_ is obligatory; his use of "hockey, my hockey" without the accompanying noun; and numerous other features are ripe for intervention aimed at changing these particular aspects of his expressive language. In a traditional approach, in short, one would have found no shortage of specific language skills to teach. Furthermore, one would have selected a few and would have worked intensively on those skills until Gino showed mastery or near mastery.

Other qualities of Gino's communicative behavior were of greater concern to us than those that would have alarmed the traditional clinician. Specifically, we were concerned with how little Gino often said. Like the traditional clinician, we were concerned with syntax, but with syntax in relation to use, that is, with pragmatics. Specifically, Gino's neglect of verbs and reliance on single-term utterances limited the extent to which he could effectively convey information that he was very eager to convey. For example, Gino was always eager to use language to narrate events that had taken place in his family. He was eager to say what Daddy and Mommy and his siblings had done; what had happened; who was involved in events and how everyone participated. It is, however, nearly impossible to use language effectively to serve the function of communicating even simple narratives without combining words into units. Gino's initial attempt to say that Richie had taken a picture at home, for example, misfired when he said, "Richie picture home," but he succeeded in narrating the event when he managed to say that "Richie took." In a conversational-communicative approach, the point of work on syntax is to enable a child to generate messages that effectively serve the functions for which the child is eager to use language; most children are not notably eager to say "This is plane" instead of "plane" unless a tangible, deliberately proferred reinforcement follows, since real conversation practically never makes one of those forms more pleasing than the other to listeners.

In addition to a difference in the linguistic focus of the intervention, an important difference is evident in a particular aspect of the intervention process in this case. Specifically, Gino was a child with enormous interest and with a minimal ability to stay interested for long. For a traditional clinician, the intervention tactic of choice is to extend the child's attention span, to force or cajole him into working on the same material until he has mastered it. Our tactic was the opposite: We aligned ourselves with Gino in agreeing to shift material rapidly. Instead of fighting against the fleeting quality of his interests, we took advantage of his ready capacity to become interested. That is, individualization meant not only individualization of the game materials and the linguistic content of the games, but also individualization of the intervention to take into account the temperment and cognitive sytle of the child.

Summary

The case of a 5-year-old boy with an unexplained but serious language delay highlights the contrast between traditional and conversational or communicative approaches to language intervention. This case also illustrates several aspects of the individualization of this intervention program.

CHAPTER EIGHT

A SINGLE CASE CHECK ON THE VALIDITY OF MEASURES: CHARLIE

The rapidity and apparent effortlessness of most young children's language acquisition are phenomena rarely observable in the population of interest in this project. The case presented here is an unusual instance of a rapid, spontaneous, and clinically unmistakable surge in language development in a language-delayed child. Between our first observation of Charlie and our second observation four months later, his language use had progressed in a pervasive way that was delightful and almost startling. What happened spontaneously to Charlie is exactly what any clinician would like to induce in a language-delayed child. This marked progress in a child not receiving the intervention presents the opportunity to take a critical look at the measures used in this research, a look free from biases connected [illegible] our hopes for effectiveness in intervening. Charlie's case is useful in providing a somewhat informal but clinically meaningful check on the validity of measures. Did the speech samples mirror Charlie's progress? Which measures showed quantitatively the striking qualitative changes? Which did not?

Background

When Charlie was first seen by project staff, he was in his second year in a "diagnostic" preschool class referred to in a later secttion of this report as the Community Preschool. He was four years and three months old at that time. Of normal size and healthy appearance, Charlie was a pleasant, cooperative child of obviously normal intelligence who engaged in play with peers, displayed many age-appropriate interests, and responded to adults with engaging warmth. The second child of working class parents, Charlie had a seven-year-old sister who was severely to profoundly deaf. The only diagnosis of Charlie available in his records was simply "language delay." In short, he seemed to be absolutely fine--except for language. Charlie's teachers agreed that his behavior was like that of his deaf sister, although testing confirmed the impression that his own hearing was normal. The only language to which Charlie was exposed was English. In particular, neither his parents nor his sister signed, to we were able to reject an initial guess that Charlie's apparent language delay might be limited to the spoken English of the school and might not be evident in ASL at home.

Change in Language: Impressions

Our initial impression of Charlie was of a child who was friendly but who felt little need to communicate with others by talking; he liked to be around people, but being around did not entail words. When Charlie did speak, he seemed to say as little as possible, and he said it very softly.

We next observed Charlie four months later. During those months, he had not been in a program but had stayed at home with his family during summer vacation. The change in his language behavior was notable to project staff and to his teachers. All adults had the same reaction: "Wait till you hear him." In our interactions with him in the classroom, he used words. Enjoying people's company was now a matter of using words to make contact as well as a matter of silent companionship. He seemed eager to tell people about events that had occurred. While his language showed many obvious immaturities, and while he was still an obviously language-delayed child, virtually every aspect of his talk seemed to have improved dramatically. He said more. He used more complex syntax. He initiated talk. He asked questions. In brief, the change in his expressive language behavior in the classroom was pervasively positive.

Data Collection

Both of the speech samples reported on here were collected by his speech therapist and were transcribed and coded using the procedure described in Chapter Five of this report.

Speech Samples: Raw Transcripts

Our first question, given the assumption that we are correct in the impression of genuine change, is: Did the two speech samples reflect the impoverishment of Charlie's language at the time of the first observation and the marked improvement at the time of the second observation?

First observation. The column of the first transcript recording Charlie's speech may be succinctly summarized: It consists of a series of single-word responses with a marked preponderance of "Yeah," "No," and an occasional noun. The interaction between Charlie and his speech therapist reads as an adult's persistent effort to provide a child with conversational openings. In the following excerpt, which concerns a toy ambulance, Charlie's minimal response to the therapist's efforts is typical; her right-answer questions seem to be a last-ditch effort to glean something from Charlie other than bare *yeahs* and *nos*.

Charlie	Therapist
	People inside, huh, that are sick?
Yeah.	
	They put people in them?
Yeah.	
	Yeah, where do they take them to?
Hospital.	
	The hospital. To make them better. Oh, my goodness, what is this thing?
Needle.	
	A needle. Did you...I had a needle once. Did you ever have one?
No.	
	No, you never had a needle?
No.	
	You're lucky. And there's the...
Guy.	
	The guy, huh.
Yeah, uh.	
	What guy?
Ah [Unintelligible]	

What this excerpt fails to convey is the friendly quality of this interaction: Charlie's brief responses read as unfriendly, but his behavior *in vivo* was interested and pleasant. A second brief excerpt illustrates Charlie's most complex effort at talk in the first sample:

Charlie	**Therapist**
	And Papa. Is that your grandfather and your grandmother? They are, that's what you call them?
Papa.	
	Papa. Who's Papa?
At my Nini's house.	

Second observation. The sample collected four months later presents a vastly different picture, as the following excerpts from a discussion of a class trip to the ocean show:

Charlie	**Therapist**
	Did we go in the water?
Yeah. Any big whale in water?	
	Any big whales in the water?
Yeah, in the water.	
	In the water that we were in?
Yeah.	
	No, I don't think so. Do you?
My mama, my mama told me.	

. . . .

A whale might bite you?

Yeah. What?

He might bite you.

He have big teeth.

He has big teeth.

Does he have a big mouth?

He has a big mouth.

How big?

. . . .

No one was in the water, no.

Yeah, maybe have big whale in the water...That why nobody in the water.

Discussion. Clearly, the raw transcripts reflect the changes that were evident to everyone. The difference between a maximum quality production like "At my Nini's houe" and a clear enough statement that maybe people were not in the water because of a big whale is exactly what project staff and Charlie's teachers had in mind in enthusing about his progress. In short, the raw transcripts seem to be representative of Charlie's language performance at the two times.

Quantitative Measures

What of the quantitative measures derived from the two samples? Was validity lost in the translation from transcript to numbers? Such translation always, at least to a clinician, entails the loss of immeasurable amounts of unquantifiable information, but how well or how poorly did the numbers reflect Charlie's progress?

In making this assessment of the measures, we must note one specific limitation: While impressions and transcripts show that Charlie's expressive language improved greatly from the first occasion to the second, neither impressions nor raw transcripts provide an exact figure reflecting how much Charlie's language improved, a figure against which the quantitative measures might be checked. For example, our clinical impressions suggest that his syntax improved greatly, but they do not suggest how greatly. For our purposes, however, it is clear that a quantitative measure accurately indexing Charlie's progress should go up, and it should go up substantially. What constitutes a substantial increase, however, is simply a matter of clinical judgment.

Table 8-1

Quantitative Measures from Charlie's Speech Samples: Numbers of Turns and Words

Measure	First Observation	Second Observation
Numbers of Turns		
Intelligible	96	66
Partially intelligible	17	21
Unintelligible	10	13
Other	5	3
Total	128	103
Numbers of Words		
Intelligible in partially intelligible turns	12	44
Partially intelligible	15	111
Intelligible in totally intelligible turns	116	156
Total	143	311

Table 8-2

Quantitative Measures from Charlie's Speech Samples: Distributions of Intelligible Turns by Length

Number and percent of:	First Observation	Second Observation
One-word turns	81 (84%)	31 (47%)
Two-word turns	12 (13%)	11 (17%)
Three-word turns	1 (1%)	9 (13%)
Turns longer than three words	2 (2%)	15 (23%)

Note. Based on totally intelligible turns only.

Table 8-3

Quantitative Measures from Charlie's Speech Samples: Length of Unit Measures

Measure	First Observation	Second Observation
Longest intelligible turn (in words)	4	8
Mean length in words of 5 longest totally intelligible turns	3.0	6.4
Mean length in words of intelligible turns	1.2	2.4
Mean length in words of totally intelligble turns other than yes, no turns	1.6	2.9
Mean Length of Utterance in morphemes (MLU)	1.2	1.8

Table 8-4

Quantitative Measures from Charlie's Speech Samples: Selected Syntactic Variables

Measure	Time 1	Time 2
Number of noun categories	4	6
Uses "yes" expression	yes	yes
Uses "no" expression	yes	yes
Number of different action verbs	1	0
Number of different times action verb used	1	14
Number of different status verbs	0	4
Number of different times status verb used	0	9
Number of different quantifiers	1	2
Number of different proforms other than pronouns	0	9
Number of different pronouns	0	7
Number of different recurrence terms	0	2
Number of different nonexistence expressions	1	3
Number of different modulation categories	2	10
Number of different locatives	3	3

Numbers of different conversational turns and words. As shown in Table 8-1, the simple variables concerned with number of turns and words show that Charlie took fewer conversational turns and used many more words in the second sample than in the first: when he took a turn, he used more words in the second sample than in the first. For Charlie, then, the raw number of turns alone is a poor measure. It is obvious that such might not be the case for another child with a language disability different from Charlie's. A child who initially took almost no conversational turns and who used few words might progress in taking a larger number of partially intelligible, unintelligible, and other turns without using many more words. Such a child would show a pattern of progress different from Charlie's.

An important point about these measures is a clinical one: Namely, these measures permit the monitoring of data for unintended negative effects. Specifically, should a marked depression occur in the amount a child spoke, these measures would clearly show that depression in dramatic quantitative terms. Clearly, such was not the case for Charlie.

Distributions of intelligible turns by length. Table 8-2 shows that the distributions of Charlie's intelligible turns by length changed dramatically from the first to the second sample. These distributions are clearly in accord with the clinical impression that Charlie was expanding the length of his conversational contributions and relying less heavily on single-word turns than he had done.

Length of unit. Table 8-3 shows five different simple variables measuring Charlie's length of unit at the two times.

Obviously, all increased. Only one stands out as increasing less dramatically than clinical impressions and the transcripts of speech samples would suggest: mean length of utterance in morphemes (MLU). A change in MLU from 1.2 to 1.8 is not "great" improvement; this measure, then, is a less satisfactory quantification of Charlie's progress than are the others.

Syntactic measures. Charlie's scores on various syntactic measures appear in Table 8-4. This table shows what seems to be an accurate quantitative picture of his progress. It is interesting to compare the picture presented by these measures with that presented by MLU, since MLU is widely interpreted as an index of syntactic development. For Charlie, MLU was a poor index of syntax.

The measures in Table 8-4 that particularly stand out as reflecting the big increases observed clinically and in transcribed speech samples are those relate to verbs and the variable summarizing the number of different modulation categories Charlie used. The sharp increase in these measures of relatively difficult aspects of English syntax provides a quantitative picture of great progress in accord with clinical impressions and transcripts of speech samples.

Speech act variables. Table 8-5 shows the distributions of Charlie's utterance in the categories of speech acts at the two times. These data point out a strength and a limitation of this approach to quantifying pragmatics. Specifically, the table reflects accurately Charlie's decreasing reliance on simple acts of affirmation and denial (e.g., "Yeah") and his increasing use of "comments" and interrogative acts. The table does not, however, reflect Charlie's increasing use of language to serve a variety of complex functions. Specifically, this system lumps together many such complicated assertions into the "Comment" category. In short, these variables fail to provide a quantitative answer to the question: Did this child do more with words in the second sample than in the first?

Table 8-5

Quantitative Measures from Charlie's Speech Samples: Percents of Utterances in Categories of Speech Acts

Category	Percent Utterances Time 1	Percent Utterances Time 2
Name	16.33	1.43
Attribute	0	4.29
Comment	4.08	22.86
Request categories	2.04	21.43
Nonexistence	1.02	0
Rejection	0	0
Denial	25.51	7.14
Affirmation	47.96	42.85
Miscellaneous	3.06	0

Table 8-6

Quantitative Measures from Charlie's Speech Samples: Four Composite Variables

Variable	First Observation	Second Observation
Amount of Speech Composite	495	680
Long Unit Composite	12.8	43.7
Syntax Composite	9	45
Speech Act Composite	7	7

Composite variables. Table 8-6 shows Charlie's score on the four composite variables discussed in detail in previous chapters. How well or how poorly did the composites summarize the data and reflect the clinical actuality? The amount of speech, long unit, and syntax composites show that Charlie made great progress. The speech act composite obviously fails to reflect the change in pragmatic aspects of Charlie's language that was clearly evident in the transcripts.

Summary

The case presented in this chapter is that of a child who made spontaneous, dramatic, clinically obvious progress in expressive language from one observation to the next. An examination of the transcripts of speech samples collected at the two times shows that these samples did, in fact, reflect the impoverishment of the child's expressive language at the first observation and the marked improvement at the second. An examination of numerous quantitative measures derived from the samples shows that the measures (both simple and composite) of amount of speech, length of units, and syntax captured the progress evident elsewhere, but that the measures of speech acts failed to capture the progress in pragmatics.

CHAPTER NINE

PRACTITIONER TRAINING

For the first two years of the project, staff provided direct service to children, as reported in previous chapters. In the third year, the project shifted from the provision of service to children to the training of practitioners. By the end of the second year, the project had developed a large variety of games, and a draft of a manual describing the program was available. Staff had worked with a variety of children and had collected speech samples from those and from contrast group children. In short, we knew how to implement the program; we had preliminary data suggesting the effectiveness of the intervention; and we had materials available for communicating the program to practitioners. In the third year, then, we needed to obtain feedback about the program and the materials. Were the games useable in the field? Was the manual clear? Finally, what considerations were important in training others to use the program?

The first section of this chapter reviews and evaluates the training of practitioners, and the second section describes a set of training procedures developed by this project, procedures that help participants to increase their clinical skills in using the communication games.

Participants

The twenty-one practitioners participating in this phase of the project were three certified language and speech pathologists, sixteen teachers, and two student techers. Of the sixteen teachers, fourteen held Special Education Certification, while two did not. Of the sixteen, four held positions as assistant teachers, while the remaining twelve were teachers or head teachers.

These participants were recruited from schools at which the project had already been working, from schools where contrast group data had been collected, and from personal contacts of project staff. In selecting participants, we were interested in (a) the potential participant's willingness to attend workshops, learn about the program, and actually to follow through in implementing it in daily work with appropriate children and (b) obtaining a group of people with a range of professional expertise. Specifically, we took pains to include both speech and language pathologists, who had extensive training, and teachers with relatively little formal training in language. Participants were required to be currently employed in a setting where they could use the program with appropriate children. Unemployed practitioners, those on maternity leave, and those serving older groups of children, for example, were excluded.

It should be emphasized that this group was recruited on the basis of interest in the project and employment in settings containing children suitable for the intervention. This was a group of motivated practitioners with an interest in giving time and energy to the project; it in no way represents a representative sample of practitioners who work with this population.

Training

There were three major components used in the training of these practitioners: the provision of the preliminary manual describing the intervention; a series of workshops; and repeated classroom visits and supervision. The workshops took place at the home of the project director and in school space located by participants. The scheduling of workshops and school visits was arranged to minimize inconvenience to participants.

Manual

All participants were provided with a draft copy of the manual for the intervention, the final version of which appears as Volume II of this report. In the preface written for the early version of the manual, and in workshops and discussions, participants were urged to provide staff with feedback about the manual. They were also encouraged to contribute any material they felt might be included in the manual, whether major changes or minor suggestions about games. Appropriate chapters of the manual were assigned as readings for corresponding workshop sessions. In addition, participants were given the brief bibliography that appears in Appendix G.

Workshops

Workshops were held from October through May of the third year of the project. Each lasted approximately two hours. Within each workshop, the sequence of activities was ordinarily as follows: First, there was a brief recapitulation of earlier material. Second, new material was presented. Third, participants practiced with the new material. Fourth, participants were encouraged to present material and to raise questions. Time was also devoted, as needed, to organizational matters: scheduling classroom visits, for example.

During the first workshop, staff presented a variety of game materials and formats, discussed the general points of the intervention, explained the project, and also explained the practical aspects of participants' involvement. Arrangements were made to have participants borrow tape recorders and game materials.

The second workshop was concerned with Picture-Toy Matching games and Identical Arrangement games. Although these formats are relatively complex ones, at least in contrast to the others, materials for these formats are comparatively easy of design. During the third workshop, we presented material on Hiding games and began asking participants to plan games themselves. For this purpose, we prepared forms similar to the charts shown in the manual (see Volume II). Participants were then given the assignment of planning Picture-Toy Matching games for which they would provide the toys and project staff would do the photography.

The fourth workshop gave participants the opportunity to share with others the games they had planned. Communicative Bingo and Lotto were presented as well. The fifth workshop covered the remaining game formats.

Two workshops followed that emphasized the theoretical underpinnings of the intervention and the design of specific games for specific children. The final workshop focused heavily on the process of game playing, and it included a videotaped presentation of the work of the project's field coordinator.

On Site Visits

Visits to participants involved both the observation of the participant during the use of the games and the demonstration of games by project staff. Each participant was visited between three and five times.

Program Usefulness

The third year of the project showed that, as anticipated, the program was readily adapted for use in a variety of settings. Teachers participating in the project used the games in one-to-one work, in work with small groups of children, and in large-group "circle" times. Speech and language pathologists used the games not only in work with target-age children, but in work with older children as well.

Feedback concerning the games themselves was very positive. Participants particularly emphasized the extent to which the children enjoyed the games:

"I found that all the children enjoyed being 'teacher' and most were able to play these games in groups, although most easily in small groups. I also found that the children seemed to enjoy the games most when they were playing with each other (with teacher to assist) rather than playing directly with me."

"The games were and are lots of fun."

"All of the children enjoyed using the games--no matter what their disability."

The speech and language pathologists seemed to have little difficulty in understanding the basic ideas of the program; they were particularly adept at communicating the games to other people and at generalizing from the particular games we provided:

"I had no difficulty communicating the games or the concept behind them to others. Everyone was very receptive... Feedback from all was very positive. The games were very useful in eliciting language from children, even those who had been resistive or unresponsive to more traditional approaches."

"Once I got the idea..., it became easy to think that way about most language activities I'd already been using."

The one area noted by many participants as lacking was material for parents. Most participants worked in settings in which home visits, regularly scheduled school visits, or some other structure existed for communicating with parents. Because the games are easy to play and the game materials easy to construct, they are adaptable for teaching to parents. Some participants did, in fact, share the games with parents. While the project provided a brief write-up intended for parents (presented in Appendix H), parent-training was not emphasized.

Training Evaluation and Discussion

The group of participants in the third year of the project posed staff with a familiar teaching dilemma: a group of students with extremely varied educational backgrounds. In particular, while some participants had considerable knowledge of pragmatics as well as of more traditional topics in linguistics, others had no apparent familiarity with even basic terms for describing linguistic structure or language disabilities. Furthermore, while some had a good background in the literature on child language, others seemed uncomfortable with any reading suggestions or assignments and wanted only to see and hear what to do.

Fortunately for the staff, one problem was less evident in this group than in workshops staff have given to other groups. Specifically, it is unhappily common to observe a sharp split between speech and language pathologists on the one hand and classroom teachers on the other. At one presentation to a group other than these trainees, for example, staff found that the assembled group consisted of two clusters of people: Speech and language pathologists were all seated together in a tight cluster and, about ten feet away, all other participants were seated together in a separate group. Obviously, our first task was to change this seating arrangement. Fortunately, no such split was evident in our trainees, perhaps because the speech and language pathologists who chose to participate were committed to close working relationships with teachers in their classrooms.

Manual. As noted above, some participants were accustomed to furthering their knowledge about their work by reading, while others simply did not read. Clearly, the manual was a poor vehicle for communicating with the latter. We did, however, realize while training this group that the draft of the manual was longer than it need be and that it was, in fact, very repetitious. Consequently, many extraneous sections and unnecessary examples were deleted in preparing the version that appears as Volume II of this report.

We also found that participants, while sometimes skilled at extending the program in new ways, at developing new games, and at applying those they had learned, were invariably resistant to putting their ideas down on paper. Our positive responses to their work, our pleas for written notes of new ideas, and our provision of forms for describing games were largely unrewarded by written descriptions of games. Providing forms did yield some responses, but it was largely left up to the staff to write up all the materials developed by the participants. In short, while we had prepared the forms for participants' use, to a large extent we found them useful in writing up our descriptions of others' work. (The form appears in Appendix G of this report.) Games developed by participants, with credit to those participants, appear in the manual (Volume II).

Workshops. The workshops were, from the point of view of the staff, quite successful. They were well attended throughout the year, and participants' response to the games and materials was positive. Experience over the year showed certain teaching procedures were much more successful with this group than were other procedures. Structured activities involving participants in hands-on experiences were the most successful procedures, while efforts to present theoretical material in anything resembling a lecture were the least successful. A particular set of activities developed for training is described in the final section of this chapter.

On-Site visits. Visits to participants' work settings were an essential component of the training. In particular, observations of participants at work quickly revealed areas of misunderstanding that staff had missed in talking with participants about their work. In making these observations, staff kept records of how participants used the games; the form for making notes appears in Appendix G of this report.

These observations and notes were used as material for a chapter in the final version of the manual (Volume II in this report). The last chapter of the manual discusses specific pitfalls and problems that we observed in these visits and provides suggestions for alternative behaviors. Two problems occurred with notable frequency, the first specific, the second general. First, participants experienced some trouble in remembering to provide children with models of responses. For example, having asked "Which one?", the participant might fail to provide a model response like: "Which one? The cat?" Second, participants initially equated the role of the speaker in the games with the general role of the teacher. Consequently, they monopolized the speaker role and failed to engage in the shifting back and forth between speaker and listener roles that is supposed to occur. Often they expressed the belief that the children were "not ready" for the speaker role.

In addition to observing participants' work, staff used the visits as the occasion to demonstrate the use of different games and to show participants strategies for work with their particular children. This opportunity to show participants how to use the program in their own settings with their own children was invaluable.

One example illustrates the value of these classroom visits. In making a visit, staff observed that a trainee, in playing the communication games with a pair of children, always engaged in one-to-one play with one child while the other was left simply to watch. Having played the games with the first child for five minutes or so the trainee then played the games with the second child, neglecting the first. This was the kind of problem that staff had not encountered themselves in their own work; nor was it a problem that was particularly evident when people described their work. During the visit, staff were quickly able to explain that the trainee's task was to remove herself from the interaction, to turn the game-playing over to the children, and to facilitate their interaction instead of mediating all conversational interchange. Furthermore, staff were able to demonstrate how to step out of the central role.

Training Recommendations

The experience of the project staff suggests several recommendations for training in the use of this program.

First, when feasible, training should be active, experiential, and hands-on. The simulation activities described later in this chapter, experiences in using and designing games, observations of videotaped sessions, and live demonstrations should be heavily emphasized.

Second, on-site visits are very useful. Participants who talk about the program as if they understand it perfectly sometimes show important misunderstandings in their actual work. Furthermore, participants seem to benefit quickly from watching experienced teachers work with children.

Third, the usefulness of written material in the training seems, perhaps obviously so, to be a function of the general ability of the trainees to learn from written materials. Trainees who kept up with their field by reading were responsive not only to the manual but also to the bibliography we provided. We shared with them articles that we found relevant to the program (e.g., Cook-Gumperz, 1979), and they, in turn, shared articles with us. In contrast, some trainees explicitly stated that they preferred to learn in workshops and demonstrations, not by reading. Obviously, one cannot communicate in writing with people who will not read. In summary, the manual, workshops, and classroom visits were all useful; how useful each was seemed to be a function of the participants, with some participants responding better to some components of the training than to others.

Training Activities

In this section, we shift from an overview and evaluation of the training to the description of a training technique developed during the third year of the project, a series of activities designed to help the participants increase their skills in using the communication games. In these "pragmatics exercises," the participants simulate the language disabilities of the children with whom they work. Besides taking the role of the child, participants in these exercises also play the role of clinician: They are given specific instructions about how to interact with those playing the role of the child.

Procedure

In pragmatics exercises, a group engages in some activity in which one or more participants are assigned tasks about how to talk. The group may consist of only two people, or it may be a relatively large group of 25 or 30.

In the first stage of an exercise, the participants simply engage in an activity without having any tasks about how to talk. In the second stage, a relatively small number of participants are given tasks about how to talk (e.g., only one person in a dyad, only four or five in a group of twenty), and no one has more than one task. In the final stage, all participants have tasks, and each participant may have more than one task. Participants assigned tasks may not tell others what these tasks are.

The easiest way to manage the assignment of tasks is to type the tasks on index cards to be distributed at appropriate times. The particular phrasing of instructions on the task cards should be adapted to the linguistic sophistication of participants; less sophisticated participants must be provided with numerous examples rather than with technical terminology.

Disability Simulation

Simulating a language disability helps participants to develop two somewhat different kinds of awareness about the experience of the language-disabled child: an intuitive sense of the child's emotional experience, and a cognitive understanding of the limitations involved in different kinds of language disabilities. In particular, participants find that some tasks are pervasively disabling, while others are disabling only in particular contexts.

The following tasks are disabling in some contexts but not in others:

> --Produce no locatives, no markers of spatial position. For example, do not use the prepositions on, above, under, on top, and such.
>
> --You do not comprehend or produce numbers accurately. If you mean "two," say "three" or "some" or something else. If someone tells you "three," misinterpret the word to mean another number.

In contrast, the following has a pervasive effect in nearly all contexts:

--Speak so softly that others cannot hear most of what you say.

As the above examples illustrate, tasks may be concerned with different aspects of language and speech. They may limit the participant's production, comprehension, or both. Tasks may involve particular linguistic elements:

--Produce no verbs.

--Ignore all modifiers. Act as if you do not understand adjectives. If someone says "big," look blank. If someone tells you to use a red toy, use one of another color. Tune out all information encoded in modifiers. You may, however, produce an occasional modifier.

They may place limits on syntax:

--Speak only in one-word utterances.

--You may use one-word and two-word utterances, but do not produce any utterances longer than two words.

--Substitute demonstratives and deictic expressions for definite descriptions. Instead of saying "the big cat," say "that one" or "this one." Instead of saying "on top," say "here."

Tasks may be about the kinds of speech acts the participant may or may not perform:

--You may not ask questions. In particular, do not request clarification of what others mean.

Some of the most interesting simulation tasks involve behavioral contingencies:

--You may not initiate any talk. Do not speak unless you are asked a question or otherwise given a direct cue to respond.

--You must include in any utterance you produce a portion of the preceding speaker's talk. Act as if you can't talk unless you have a model of what to say.

Other tasks are concerned with the mode of communication:

--Try to substitute nonverbal means of communication for verbal means. Reach out and take things instead of asking. Show things instead of describing them.

It is also instructive to include tasks that have little effect upon participants' success in referential communication:

--Use no articles, including demonstrative articles. Do not say: "a," "an," "the," "this," "that," "these," "those."

Playing the Adult Role

Other tasks focus on the adult role. These tasks help participants to differentiate between behaviors that foster communicative interaction and those that terminate conversational sequences, limit children to passive roles, and otherwise have counterproductive effects on the communication flow.

The following tasks require participants to engage in behaviors that Hubbell (1977), Seibert and Oller (1981), and others have criticized as counterproductive in efforts to facilitate the spontaneous, effective, and appropriate use of language:

--Provide positive reinforcement unrelated to what others are saying. For example, say frequently: "Good talking," "I like the way you said that," and so on.

--Request repetitions when you actually understood what the other person meant.

--Try to elicit imitations of your own pronunciation and of model sentences.

--Ask people to provide labels for things that you are able to label yourself. (Frequently ask, "What's this?" even when you know what the object is.)

--Whenever anyone else uses an utterance that is not a full sentence, ask the person to produce a full sentence.

It is instructive to assign the above tasks to some participants and to assign the following communicative tasks to others:

--Expand and extend other speakers' utterances.

--Frequently request details that you do not already know.

--Do not ask any questions that have one and only one right answer. Do not ask questions to which you already know the answer. But, do ask many questions.

Clinician behavior tasks may be used in combination with any of the simulation tasks, or they may be designed to mesh with a particular simulation task. For example, the following simulation task:

--Do not speak unless the person addressing you uses an explicit attentional marker ("Hey," "Look," "Your turn," or your name).

is effectively paired with the following two clinician behavior tasks, the first of which has a positive effect on interaction, the second a negative effect:

--Use many attentional markers. Frequently use the name of the person to whom you are speaking and otherwise use words to gain and hold the person's attention.

--Avoid using attentional markers. Do not call people by name. Do not say: "Look," "Watch," "Hey," "OK?" and such.

Suggested Materials

The group activities that provide the context for the tasks about how to talk may be unstructured or structured. Participants may simply engage in conversation. Particularly helpful in highlighting the points of the exercises, however, are the communication games themselves.

Different games are useful in showing the context-dependence of some language impairments. For example, inaccuracy or failure in comprehending or producing color terms interferes with referential communication if some of the game materials are alike except in color (e.g., a small red block and a small blue block), but not if the materials are all the same color. Sets of materials differing systematically along several dimensions are helpful in illustrating the frustration involved in some language disabilities. For example, a participant assigned the task of speaking in single-word utterances has a difficult time describing arrangements involving the placement of circles and squares that are large and small, red and blue.

Language lessons and activities drawn from commercially available language development and remediation programs are also productive choices, since combining these activities with tasks about how to talk quickly reveals the demands for language that such activities do and do not create; the exercises provide a means of evaluating the strengths and weaknesses of language intervention activities.

Discussion

Simulation activities are a common feature of programs designed to help nondisabled children and adults understand disabilities (e.g., Bookbinder, 1978; Boston Children's Museum, 1978; Clore & Jeffrey, 1972; Wilson & Alcorn, 1969), yet the simple technique of simulation has been neglected in the field of language intervention.

Pragmatics exercises provide an active, experiential means of learning about the frustrations and communicative restrictions imposed by language impairments. The simulation tasks used in these exercises do, however, have the same limitations involved in simulations of other disabilities. Wearing a blindfold for an hour a day is not the same as being permanently unable to see. Similarly, using only one-word utterances in a brief exercise is not the same as living with limited syntax for long periods of time. Simulation tasks help participants to appreciate the nature of a disability, but they do not duplicate disabilities.

As a training or supervision device, these exercises have the advantage of allowing participants to discover strengths and weaknesses in their own work in a playful context. Participants find that the task of initiating no talk is, in fact, nonhandicapping if intervention activities always place the child in the role of passive responder. No one need search for a tactful way to tell these participants to let children initiate conversation. When participants interact with someone who does not respond unless an interlocuter uses an attentional marker, they learn to adapt to that characteristic without being told to do so. Participants engaged in referential communication tasks quickly experience the irrelevance of requests for full sentences, interjections of "Good talking!" and other such behaviors.

In short, the exercises permit a supervisor or teacher to avoid the often futile process of telling supervisees or students to change their behavior. In the exercises, participants experience the linguistic demands created by different intervention approaches and hence develop their own intervention strategies based on a practical understanding of the pragmatics of communication.

Summary

The training of 21 practitioners in the use of the program provided feedback about the program itself and information about training materials and procedures.

Feedback about the games was very positive. Feedback from participating trainees led to changes in the manual (Volume II of this report). Participants contributed ideas included therein, and staff observations of trainees' difficulties in using the games led to new sections of the manual.

Active, hands-on experiences were particularly helpful training procedures. A series of training exercises developed in Year 3 is presented, exercises in which participants simulate language disabilities and learn to avoid adult interventions that interfere with conversational exchange.

CHAPTER TEN

IMPLEMENTATION: OBSERVATIONS AND SUGGESTIONS

The schools described in this chapter were the sites at which the language program was developed and evaluated during the first and second years of the project. With one exception, noted below, project staff provided the language remediation at these schools during those years.

In this chapter, we first describe the schools in order to illustrate the different contexts in which the language program was developed and the range of options for using this approach. In what contexts can this approach be used? We then discuss and evaluate the factors that seemed to contribute to the relative success or failure of project staff in finding a way to have an impact on the extent to which these schools moved toward a genuinely communicative approach. What factors facilitated or impeded the implementation of this new way of doing language work?

Sites

The Community Preschool Class

The Community Preschool Class was located in a public school and was a "diagnostic" class run by the special education department of the city in which it is located. This city is a suburb of Boston with a largely working-class and white-collar population. It includes several ethnic communities.

The class, which contained between ten and twelve children, was taught by a head teacher and an assistant teacher. Both have special education certification and are experienced teachers. A student teacher was often present as well. The special education classes at the local high school provided this class with additional help; high-school-age special needs students were sometimes available as aides.

The children in this class ranged in age from 3 to 6 years. This class was intended to be language-focused; consequently, all the children in the class were presumably referred to it because of some assessment related to language. Two of the children, however, showed no language handicaps at all. Both seemed to be neglected children. Our hunch is that the referral of these children to this class was based on the assumption that they would benefit from the warmth and attention provided there, rather than on a misdiagnosis of these children as language-disabled. The class included children with and without cognitive delays. In short, although this was not officially a mainstreamed class, it actually contained children whose language development was normal and who, in many ways, functioned as models of competent language use as do the nonhandicapped children in mainstreamed classrooms. All of the children in the class were Caucasian and all came from monolingual, English-speaking homes.

A registered speech therapist provided service to some of the children in this class. She worked in the classroom, and was at this school two mornings each week. The children in the class also attended adaptive physical education classes. One child received occupational therapy as well. The children were visited by school department music teachers and an art teacher; they had classes with the school librarian; they attended the school's assesmblies; and they otherwise received many services. The class took many interesting, well-planned field trips (e.g., a trip to a zoo, a boat trip in Boston harbor, a visit to an apple orchard, trips to the Science Museum and Aquarium).

More than any other teachers we encountered in conducting this project, the teachers of this class were committed to a communicative approach to work with the children. When one entered this class, there was always a sound of quiet conversation. The teachers were skilled at maintaining a noise level low enough to permit conversation. For example, the head teacher had the noise-making part of a toy vacuum cleaner removed so that the children could continue to use the toy without making normal conversation impossible for everyone else. The rules for behavior in the classroom were clear and effective. The room contained many interesting materials, and the children engaged in a variety of activities. The teachers made ample use of photographs of the children on display boards and in teacher-made books. For example, each field trip resulted in a book about the trip illustrated with instant photographs. The field trips were discussed ahead of time and reviewed afterwards. The teachers engaged in many casual conversations with the children. They were particularly adept at using adult-to-adult conversations as a means of showing the children a good model of communication.

In circle times, many activities were communicative. The teacher directing the circle might, for example, ask each child what he or she had done during the past weekend. These teachers were skilled at asking questions and providing prompts attuned to the needs of each child. A child who talked hardly at all, for example, was given a great deal of help in relating what he had done, while the child who was relatively skilled at narration was asked detailed questions that enabled him to provide a long and rich account.

The snack times in the classroom were used as an opportunity for communication. The teachers often asked the children how many crackers they wanted, offered them a choice of foods, and otherwise created a reason for the children to use words to request food. They provided a variety of different foods so that there was something new to comment on. They chatted with the children while everyone ate; the atmosphere was like that of a pleasant family mealtime.

The speech therapist worked closely with the teachers and worked with children in a corner of the classroom instead of pulling the children out of the room. She used a large number of commercial materials (e.g., the Peabody Language Development kit, Distar, Teaching Resources materials) but picked and chose activities rather than following any one curriculum. Although her aim was communicative, her work focused mainly on eliciting labels rather than on creating the kinds of communicative situations that the project's games provide. For example, she showed children pictures of people engaging in activities and asked the children what the people were doing. She named an action (e.g., hop, sit, stand) and asked the children to perform the action, then asked them what they were doing. In short, although her work was always tied to meaning in some way, it was not communicative in method according to the standards of this project; she avoided meaningless articulation drills, and she engaged in conversations with the children about topics of shared interest.

The general atmosphere of this class was positive. The adults were warm, interested in the children, and good at managing the children's behavior in a pleasant, unobtrusive way. The activities provided were sometimes highly structued, sometimes loosely structured. A daily schedule was followed in a predictable fashion. The transitions between activites were always smooth and unhurried.

The involvement of the project staff in this classroom followed, to a large extent, the model set by the speech therapist. We worked with the children individually and in small groups in the corner of the room used by the speech therapists. We joined in activities. We ate snack, participated in circle times, and conversed with the children. Although we concentrated our work on the target children, we included all of the other children in the games as well. In the course of our work with this class, we encountered no difficulties with the teachers. We felt welcome, and our work meshed with the general approach of the teachers.

The Mainstreamed Nursery

The Mainstreamed Nursery is a private nursery school serving approximately half handicapped and half nonhandicapped children. It contained four classrooms with between 16 and 24 children in each classroom. The children attending the school came from predominantly working-class and white-collar families. Although the school is located in an affluent suburb, many of its children came from a predominantly working-class city that contains several institutions for the mentally retarded and the mentally ill. Some of the children in the school came from families whose members had had repeated hospitalizations at these institutions.

This school provided many kinds of services to the special needs children. Professional and volunteer help abounded. One's first impression when walking into this school was that it had more adults available than any other school one had ever seen. A typical special needs child at this school received speech therapy, gross motor work, special needs tutoring, and, perhaps, play therapy as well. All special needs work was conducted outside of the classroom.

The classrooms themselves, as noted above, contained many children. One reason for the large class size and for certain other characteristics of the school is that the school was housed in the Sunday School building of a religious organization. Because the teachers in the school shared classroom space with Sunday School teachers, they were not free to partition rooms and otherwise to make permanent changes in the space they had available. Special needs teachers, too, worked in areas of the building used by the Sunday School. The necessity of putting away all materials at the end of every school day placed a considerable burden on the teachers. It was difficult for special needs teachers to find appropriate space in which to work.

Despite the problems created by inadequate space, the teachers and volunteers at the school had a strong commitment to the school. Many of the volunteers were parents of children who attended the school, including grateful parents of handicapped children. The personal commitment to mainstreaming and the personal commitment to this school, combined with the camraderie involved in the school's collective determination to make the best of inadequate space, gave this school a special atmosphere.

The actual classroom activities were traditional nursery school activities. There was a great deal of free play and, in the classroom for children in their last year at the school, highly structured traditional teaching of kindergarten subjects. The classrooms themselves were extremely noisy; the poor acoustics of the building plus the large size of the classes made it difficult to converse with the children in the classroom. Although there were many adults in the school, each classroom had only two teachers. The teachers, in general, spent very little time conversing with the children. The implicit belief of the teachers seemed to be that the language-disabled children benefit (a) from their interactions with nondisabled classmates and (b) from the help provided by specialists. In short, the practices of the classroom teachers contrast sharply with the communicative milieu evident in the Community Preschool Class.

The speech therapy provided at the Mainstreamed School was highly traditional. Its focus was on articulation. Typically, a child receiving speech therapy at this school sat facing a mirror and repeated the therapist's pronounciation of sounds or imitated the therapist's labelling of pictures. Midway through the second year of the project, a speech therapist who had just received certification was replaced by an experienced speech therapist who had recently retired from full-time work. Unhappily, neither of these speech therapists related well to preschool children. The first therapist had repeated difficulty in managing the children's transitions from the classroom to the therapy. She sometimes resorted to dragging crying children from the classroom. The second therapist placed a heavy emphasis on discipline and seemed to intimidate the children.

At this school, the project staff served as special needs techers providing language therapy. Like other special needs teachers, we worked with the children in sessions outside the classroom. Like other special needs teachers, we worked mainly in a very large hallway, playing the games either at small desks or on rugs. We tried to work within the classroom, but the extremely high noise level and the crowding of classrooms made it almost impossible to play the games there. We did manage to conduct a few sessions outdoors during recess. We also spent time in the classrooms playing and talking with the children. It was clear that the children had little opportunity for conversation in the classrooms, and we tried to provide some opportunities. We also wanted to convey to the children the idea that we were very different from the speech therapists with whom they had had negative encounters, and spending time in the classrooms seemed to be one way to communicate that idea.

In short, our work at this school was in marked contrast to other activities that went on at the school. The speech therapy provided to the children was highly traditional and noncommunicative. The teachers' interactions with the children were infrequent and largely noncommunicative. Our communicative work, then, took place in an otherwise noncommunicative context.

The Clinic Preschool

The Clinic Preschool consists of two classes that share the same space. One class meets five mornings a week, and the other meets four afternoons a week. The preschool is located in the basement of a community mental health center in an urban area. The school serves a predominantly working-class and white-collar population.

The morning class contained 12 children with a variety of behavior problems, hearing loss, or relatively mild developmental delay. This class was taught by a head teacher, two assistant teachers, and a student teacher. The afternoon class contained 11 children with serious handicaps. One child had a serious orthopedic handicap, two were autistic or autistic-like, while the others were mildly to severely retarded. This class was taught by a head teacher, an assistant teacher, and a student teacher.

The same speech therapist served both classes. She did not work directly with the children but rather advised the teachers about facilitating the children's language development.

Morning class. The morning class placed a heavy emphasis on the children's control of their behavior. The children were frequently reminded to sit down, to stay on their rugs at circle time, and otherwise to stay where they belonged. Unfortunately, the teachers' interventions were largely directed at misbehavior rather than at good behavior. The main reward for good behavior was the oft repeated phrase "Good bossing yourself," evidently someone's idea of how to praise self-control. Children who did not "boss themselves" were put in their cubbies until deemed ready to return to the group.

Language work took place in two contexts. First, circle time activities were often geared to language work. When we first visited this class, the teachers used mainly "known information" questions during circle times. At circle time, as in most other activities, the main emphasis was on whether or not the children were behaving themselves rather than on whether or not they were talking well. Second, the class broke up into four "language groups." The language group time lasted about 20 minutes. Each of the four teachers met with a small group of children. The teacher conducted a language activity, then read the children a book. At the beginning of our work at this school, all language-group activities were highly traditional ones. For example, the teachers showed the children pictures of objects and elicited labels. During both language group and circle times, the children were repeatedly praised for "Good talking" rather than reponded to with topic-relevant comments.

Of the sites at which we conducted this project, this class presented the most difficulties. The head teacher of the class was clearly happy with a traditional way of working with the children. At our initial meeting with the teachers, we offered a number of options for their involvement with the project. The teachers agreed strongly that they did not want us to provide direct service to the children. Instead, they greatly preferred the option of having us provide them with game materials and supervision.

This kind of involvement with the class proved to be both unsuccessful and successful. The head teacher, one assistant teacher, and the student teacher showed no genuine interest in changing their usual ways of working with the children. All of our efforts to provide games, to suggest communicative adaptations of current activities, and otherwise to make their work more communicative were rebuffed or frustrated.

One assistant teacher did begin to use the communication games in a very skeptical manner. During the course of the year, however, his language groups became a model of how to run a communicative session. He not only used the games we provided, but he also developed interesting variations on games. His leadership of circle times also changed radically. Instead of asking known information questions, he began to ask questions about what the children had done at home, what they thought, what they wanted to tell people. In short, while the overall experience of trying to work with these teachers was one of frustration and failure, one assistant teacher moved from a highly traditional to a highly communicative approach during the year.

It may be of some interest to speculate about our failure to find a successful way to work with the other teachers in this class. An important source of the teachers' resistance seemed to be the context of the class. One had the sense that these teachers, working at the bottom of the mental health hierarchy, received a plethora of expert advice. The head teacher, in particular, attended numerous conferences with the health center staff and received a great deal of supervision and advice from psychiatrists as well as from the speech therapist. Clearly, our approach was in conflict with the approach of the traditionally trained speech therapist and the control-oriented psychiatrists. The head teacher, then, effectively blocked us from becoming one more source of intrusion: She allowed us neither to work independently nor to exert any real influence on what she did. In retrospect, then, it seems clear that our largely unhappy experience with this class might have been avoided had we perceived the head teacher's commitment to continuing to work in a traditional way or had we managed to negotitate permission to conduct language training sessions ourselves.

Afternoon class. The afternoon class had a considerably more handicapped group of children than did the morning class. The head teacher of this class placed a high value on providing the children with an experience of affection and predictability. The class had a pleasant atmosphere of calm and order. While one heard an occasional reference to the "bossing yourself" that dominated the morning class, the overall atmosphere of this class was not a critical one oriented toward censuring undesirable behavior. Both the head teacher and the assistant teacher were highly skilled at dealing patiently and calmly with the challenges presented by some extremely difficult children. These teachers worked well together. It was clear that a good working relationship existed among those teachers and the two student teachers who were in the class during the fall and spring, respectively.

The curriculum for this class placed a heavy emphasis on sensori-motor skills. A good deal of time was devoted to activities designed to foster sensory awareness and to develop motor skills. In the course of these and other activities, language use was rewarded with the phrase Good talking. At snack time and various other times, the children were explicitly taught to produce some ritualized phrases. For example, the children were told to ask for food at snack time by saying I want cheese or I want juice. If the children wanted food, they were required to produce these phrases. The requirements varied depending upon the children's ability. For example, a very low-functioning child was simply requied to produce a word, while a more skillful child was required to say the full "I want" sentence. This behavior modification approach was used in a flexible way.

Circle times were highly structured and involved a number of agreeable language rituals. For example, one stanard greeting activity was a game of passing around a mirror. A child who received the mirror was asked in song: "How are you today, [name]?" The child was then supposed to reply (e.g., "Fine"). The class then finished singing a greeting, and the child passed the mirror to someone else.

When these teachers spoke with the children, it was apparent that the teachers made a great effort to listen carefully to the children and to speak clearly and comprehensibly. There was, however, an absence of the kind of relaxed, informal chatter evident in the Community Preschool Class. The teachers, one felt, were careful about what they said to the children; one did not hear teachers impulsively sharing observations or anecdotes with the children. In part, this care in speech seemed to be a response to the serious disabilities of some children. There were, however, several children with good language skills, including one orthopedically handicapped child with excellent language skills and clear articulation. This care seemed related to the same theme of control evident in the morning class. While the morning group teachers emphasized the children's self-control, the afternoon teachers emphasized their own self-control.

A special feature of this class was its adjunctive use of sign language. Both the head teacher and assistant teacher signed while speaking during circle time and during other structured activities involving the whole class. They also signed while speaking to some children. There were no hearing-impaired children in the class, and the signing was intended to facilitate the children's communicative ability and to facilitate their eventual acquisition of spoken language. While a few children imitated the signing of names at circle time, none of the children used signing as a communication system.

Fortunately, our involvement with this class was considerably more successful than was our involvement with the morning class. Specifically, after some trial-and-error efforts to find a way to mesh with this group, we began to work directly with three children twice a week. Unfortunately, we were unable to work with two very interesting children. Both of these children received individual psychotherapy from members of the clinic staff. The teachers felt that these children's absence from the class for therapy cut deeply into their brief school time (only three hours, four days a week) and that no further time should be taken away.

The teachers observed our work with the children. While they showed interest in our approach and while they permitted us to work with the children, they did not alter their own dealings with the children. As was the case with the morning group, the clash between the traditional approach advocated by the clinic experts and the approach we represented was a sharp one, and the compromise we reached seemed to be the best for which we could hope.

The Downtown School

The Downtown School is a large public elementary school located in a heavily populated urban area that contains a large public housing project. Many children are bussed to the school from other parts of the city. Our work at this school was with two classrooms of special needs preschool chidlren. These classrooms contained children from a wide range of racial and ethnic groups. Many of the children in the classes were from impoverished families, many from down-and-out families.

This school housed two special needs preschool classes, one serving older children (4- and 5-year-olds), the other serving younger children (3- and 4-year-olds). The older class was taught by a head teacher with special needs early childhood certification and many years of experience; an assistant teacher; and a series of student teachers. The younger group was taught by a recently transferred head teacher whose previous experience was limited to work with nonhandicapped kindergarten children; an assistant; and a series of student teachers. Student teachers generally considered these classes to be an undesirable placement, so the classes did not usually attract skilled or gifted student teachers. The older group had 14 children, the younger group, 8 children. Both classes met four days a week. Most children attended from 8:30 to 2:00, but a few left at 11:00. All of the children ate breakfast in the school cafeteria, and those attending for the full day ate lunch there as well.

Although the I.E.P.s of most of the children in these classes called for speech therapy, only one child actually received any during our year at the school. That child had a mild articulation disorder. The children attended adaptive physical education but otherwise received no special services.

Both classes were abundantly supplied with materials. The rooms contained puppets, dolls, books, play furniture, easels, puzzles, and other materials. The storage rooms housed large numbers of expensive and unused teaching materials: Peabody Early Experience kits, Peabody Language Development kits, the DLM Big Language Box, Teaching Resources materials, and many others.

Older group. The older group contained mainly children with mild to moderate developmental and language delays and children with concomitant behavior problems. Most seemed to have had little previous exposure to contexts requiring age-appropriate social behavior. These children were obviously hungry for adult attention and would cling to any receptive adult.

This moderately structured class ran on a predictable schedule and provided many activities. The class often took walks, and many opportunities for using materials were provided. For example, the children were often free to use paints at the easel. Display tables, bulletin boards, and other materials changed to reflect changes in the seasons. Each holiday was celebrated with displays and activities. Many projects, however, were largely teacher-made. For example, the making of Easter hats was accomplished mainly by the teachers.

Although the head teacher of this class was aware of the children's need for language learning, her main emphasis was on their development of controlled social behavior. Most interaction among teachers and children took place during highly structured activities. For example, at Halloween the teacher carved a pumpkin while the children watched. She described what she was doing and asked various known-information quetions. In free play times, breakfast times, snack times, and so forth, there was little effort to converse with the children. The teachers did not seek the children out as conversants, nor did they use their own interaction as the opportunity to model language use.

Younger group. The children in the younger group were markedly disabled. All had notable developmental delays or disorders. None of the children showed anything even close to age-appropriate cognitive, linguistic, or social skills. The children were eager for adult attention and affection, and they showed little ability to play cooperatively with one another.

In spite of the obvious neediness of this group, the teachers assigned to his class had neither the training nor the experience to deal with a difficult group. The head teacher was affectionate and gentle with the children but provided few activities. The children spent a great deal of time riding bikes around the room, neither talking nor playing with anyone. The assistant teacher had previously worked only with high school children and appeared to spend very little time interacting with the children. One had the sense that little was going on in this room. The preschool coordinator assigned to this class was aware that there were many problems with the teaching and spent a great deal of effort providing the head teacher with visits to other classes, workshops, and in-class supervision. During the year we worked in the school, however, no change was evident in the way the class was run.

Project involvement. The teachers in both classes were willing to have our staff work with the children in tutoring sessions outside of the classroom. The teachers of the older group felt overworked and pressed for time, while the teachers of the younger group seemed unwilling and unable to carry out any of the activities they had been repeatedly urged to begin. Our only option, then, was to provide direct service to the children.

Because this was so needy a group of children, we spent some time with the children at breakfast and in the classroom as well as during training sessions. At breakfast, for example, we started and maintained conversations about breakfast cereals, trucks visible outside, pictures on the walls, and other here-and-now topics. Our efforts to make breakfast a time for conversation were successful only when we ourselves did the talking. The teachers and student teachers spent breakfast time eating their own cereal and admonishing the children to sit down and eat.

In short, this school provided a challenging context for work. The teachers were uninterested and the context of the children's lives noncommunicative. The children themselves, however, were eager for adult attention and for interesting activities. Consequently, although the context of the school was a difficult one in which to work, the direct work with the children was stimulating and gratifying.

Project Evaluation: Development Sites

The most important point about the language program that emerges from our experience at these schools is that the program we introduced was a highly flexible one. Adaptations to different contexts were feasible. The program was implemented in sessions inside and outside classrooms; in mainstreamed and nonmainstreamed settings; in individual and small group work. While some settings were easier than others to enter, project staff always found some available route of entry.

While the adaptability of the language program itself is worth noting, it is also instructive to examine the difficulties encountered by project staff. What were the sources of difficulty encountered in introducing this program? What suggestions can this project provide for those who will introduce this approach at other schools and in other classrooms?

Physical Space

Two considerations of available space affected the ease of implementation: Space available for game-playing, and space factors affecting the noise level of areas in schools.

With regard to space for game playing, our requirements were seemingly minimal. The actual space needed for using the communication games is no more than is required, say, for assembling puzzles. What is required is a definable space, one that is not easily overrun by large numbers of overly interested children. In small, overcrowded classrooms, these minimal requirements were not met, and we had to work outside classrooms. In finding outside space, our willingness to be highly flexible was important in determining our ability to conduct the program: We were willing to work almost anywhere. For example, in the Downtown School, we were happy to work in what had originally been cloakrooms, huge rooms equipped with the plethora of shelves that one finds in very old school buildings. In that and other sites, had we insisted on an office, a room with desks, or other "professional" space, we would have been unable to enter the system. In contrast, large classrooms with definable spaces, as in the Community Preschool Class, were ideal; working within the classroom enabled us to enlist many children as players, to integrate our work with the activities of the class, to communicate easily with teachers, and otherwise to work in an optimal situation.

Noise level is an obvious impediment to effective language intervention that is easily ignored, but provisions for controlling noise level are extremely important in implementing this or probably any other language effort. How can children learn language in an environment so noisy that no one can hear anyone else? How can practitioners intervene effectively when the children cannot hear them? Despite the obviousness of noise-related difficulty, we encountered schools in which this problem was ignored.

Staff Resistance

Resistance to the approach from teachers and other school personnel consisted of resistance to this specific kind of intervention and resistance unrelated to the particular content of this intervention.

Three factors seemed related to resistance to this specific kind of intervention: an overconcern with obedience and control; a negative approach to maintaining control; and training in highly traditional language intervention procedures.

Obedience and control issues. The communicative approach to language intervention involves a special kind of relationship between the adult and the child, a relationship in which there is two-way communication. In the concrete details of game playing, that communication consists of exchanges of referential information. In general, it consists of exchanges of other kinds of information as well.

The adult whose main interest in a child focuses on the child's obedience is, in general, an adult with limited ability to create a relationship inviting mutual exchanges. In particular, the adult who approaches the issue of control by becoming constantly vigilant to deviations from the rules and whose main interactions with children are negative is poorly prepared for this intervention program. The adult implementing the program correctly wants to know what the children have to say; this adult cares more about listening to the children than about having them do what they are told. A classroom dominated by authority issues and by negative reinforcement for rule deviations is a classroom incompatible with this approach. Just as there are children whose behavior problems are so severe that they are unready to pay attention to games or other language intervention activities, there are also teachers and other practitioners whose orientation to children is incompatible with this approach. In a communicative approach, using words to direct other people, to express opinions, and otherwise to take a directive role is not monopolized by the adults, and there are practitioners uncomfortable with allowing children anything but an obedient role.

Traditional training. Extensive training in highly traditional language intervention procedures is, in effect, training in a role that differs from the role one takes in communicative work. Because this intervention program differs from traditional programs, practitioners with that training can be expected to raise important questions about those differences. Furthermore, even when they genuinely want to approach intervention in a new way, they have a great deal of work to do, including the unlearning of traditional training. As the manual for the program makes clear, these practitioners must expect to experience difficulty in giving up old habits of interacting with children. For example, requesting labels is a behavior that traditional training ingrains in practitioners, as is requesting other kinds of known information.

Paradoxically, then, the less traditional training an adult has, the easier it is, in some ways, to help the adult implement this intervention as intended. For this reason, this intervention program would seem to be exceptionally apropriate for two particular kinds of training: training parents and training paraprofessionals.

General resistance. The project also encounterd two notable sources of resistance that seem to have nothing to do with its particular content: practitioners barraged by too many experts, and practitioners who felt overwhelmed by demands already placed on them.

The problem of teachers given massive amounts of expert advice was most apparent at the Clinic Preschool. While the teachers at the Downtown School and Mainstreamed Nursery were in obvious need of more training and supervision, those at the Clinic Preschool were both oversupervised and underempowered. One had the sense that these teachers' constant vigilance for children's misbehavior simply mirrored their supervisors' constant vigilance for teacher misbehavior. It is clear that another set of experts could not have been welcome in these classroms, and our difficulties in entering this new system were, to some extent, unavoidable.

The problem of teachers who were too overwhelmed to try a new approach is a complicated one. In some cases, for example in the Downtown School's younger group, it was clear that teachers were, in fact, conducting very few activities in the classroom. Indeed, one had the sense of teachers simply putting in time in the classroom, not the sense of teachers doing more than they really had time to do. In other cases, for example at the Mainstreamed School, classroom teachers had many more children than they could reasonably be expected to handle given difficult space in which to work.

Suggestions for Introduction

From the project's experience described and discussed in this chapter emerge several points that may be helpful to special education directors, supervisors, and others introducing this program into schools and classrooms.

First, since this language intervention program is highly adaptable, it is easy to be flexible and considerate in introducing it. It is unnecessary and counterproductive to demand that teachers make massive reorganizations in time and space to accommodate the program. The project's experience shows that it is feasible to adapt the program implementation to the needs of the school, rather than vice versa.

Second, demonstrations of the actual games are invaluable in overcoming many sources of resistance. For example, traditionally trained practitioners sometimes fear that important content will not be taught; in practice, they soon see that there are communicative ways to teach most of the content they value. Furthermore, practitioners who greatly value "good" behavior may fear that their groups will disintegrate into chaotic, unproductive activity; they soon discover that that is not the case. In short, practitioners threatened by the idea of doing a new program are often most effectively reassured by samples of the actuality.

Third, since this program is readily communicated to virtually anyone, it may be easier to begin introducing the program to aides, paraprofessionals, and other personnel than to those in authority. Indeed, an effective policy for this project has been to share anything about the program with anyone who is interested.

Fourth, in introducing this program, it has been important to recognize situations in which difficulties in implementing the program are unrelated to the program or the project. School systems, classrooms, and teachers have periods of difficulty that impede any change, as was evidently the case at the Clinic Preschool. Forcing this or any other program onto the individuals already stressed by such situations is clearly unproductive.

Fifth, however enthusiastic one is about the program, it is important to remember that others may take time to grasp the source of one's enthusiasm. Our experience in this project suggests that the program is, in fact, quite able to sell itself. Working to help practitioners try a few games, demonstrating the games with children, and otherwise taking a low-key approach is considerably more effective than is a blatant insistence that practitioners stop doing everything they have been doing in order to embrace the pragmatics revolution.

Summary

Observations of schools at which the intervention program was developed show that the program is a flexible one, adaptable to a variety of contexts. Impediments to implementing the intervention included those related to physical space: the availability of space and the noise level in the school. Staff resistance was both specific to the intervention and general: Resistance to the intervention was related to an overconcern with and negative approach to obedience and control; and to traditional training. General resistance was encountered when practitioners felt barraged by too many experts overwhelmed by the demands already placed on them.

Suggestions for introducing the program include: flexibility in adapting to different contexts; demonstrations of materials and games; a willingness to share the program with all interested staff; the recognition of general resistance; and a low-key approach.

CHAPTER ELEVEN

CONCLUSIONS AND RECOMMENDATIONS

The aims of the project, as outlined in the first chapter of this report, were: (a) to develop a language intervention program consisting of a series of communication games for seriously language-disabled young children; (b) to evaluate the impact of the intervention using group comparison and single case approaches; (c) to investigate the practical usefulness of the intervention in field settings; and (d) to produce a marketable product.

Chapter 2 of this report describes how the first aim was met; the intervention program, game formats, and games are outlined. With regard to the second aim, the evaluation of the intervention is reported in chapters 3 through 8, with group comparison results appearing in chapter 5 and single cases in chapters 6 through 8. Overall, the results reported are positive. Exploratory data analyses not directly related to project aims are also reported (see Appendix I).

The third aim, and the main point of the third year of the project, is the subject of chapter 9. Training practitioners showed that the games developed in the project could be used by teachers and clinicians in field settings. Furthermore, the project developed procedures for training practitioners, also described in chapter 9.

The training of practitioners also contributed to the project's success in meeting its fourth aim, the production of a marketable product. Feedback from participating practitioners led to changes in the draft of the book that appears as Volume II of this report, and participants contributed games described therein.

In short, the project was successful in meeting its major aims. In concluding a project like this one that has been thus successful, investigators frequently have an experience that is potentially productive, despite its superficially ominous ring: the sense that now one really knows how to begin the project. In this final chapter, we attempt to make productive use of that sense by discussing three project areas: the evaluation of the intervention, the implementation, and, finally, the intervention itself. What directions and recommendations for future work in each area does this project's experience suggest?

Evaluation

As noted throughout this report, the "pragmatics revolution" now in progress had led to revisions in assessment as well as in intervention procedures. In this section, we discuss only two of the major issues related to measurement and evaluation of the impact of the intervention: the group comparison versus single case issue, and the general issue of the usefulness of quantitative methods in this area.

Groups versus Cases

In 1975 Gilbert, Light, and Mosteller published a highly persuasive paper, "Assessing Social Innovations: An Empirical Basis for Policy," from which many readers concluded that randomized, controlled field trials were the only studies of any value in assessing the impact of interventions. As Gilbert, Light, and Mosteller discuss, however, even investigators convinced of the value of randomized controlled field trials are often "pushed" into studies without the controls of randomized trials for reasons of feasibility. In the classic 1975 paper, Gilbert, Light, and Mosteller present examples and arguments to the effect that the apparent obstacles to such studies can, in fact, be overcome. For the investigator operating on a modest scale, however, those examples and arguments are less persuasive than one might hope. That the investigators conducting the Salk Vaccine trials were successful in obtaining consent for randomization does not convince anyone except an exceptionally well-funded (or grandiose) investigator of the feasibility of doing likewise. In the ordinary course of doing research, the feasibility issues are, in fact, considerably more of an obstacle than Gilbert, Light, and Mosteller even begin to suggest. Furthermore, while Gilbert, Light, and Mosteller present a persuasive argument that the cost to society as a whole of not doing randomized controlled field trials exceeds the cost of doing them, the investigator who has two or three years and a fixed budget must be concerned with his or her own limited resources in time and money rather than with the big picture of cost to society. For example, in a project like this one, spending the entire time and budget of the project in conducting a small randomized controlled field study would have been a likely outcome of the effort to conduct one at all; in that case, of course, the project would have had no resources with which to develop the intervention itself. There would have been nothing to evaluate.

While one may fault Gilbert, Light, and Mosteller for glossing over the pracical issues, their arguments with regard to the limitations on the inferences one may draw from group comparisons other than randomized controlled field studies remain believable. This investigation is, in fact, a case in point. Without randomization (that is, the random assignment of subjects to treatment and contrast groups), we cannot know with the certainty that randomization would have provided whether the observed results are really attributable to the intervention. At best, the results are highly suggestive of the effectiveness of the intervention; the results suggest that a randomized study would be worth conducting.

This kind of limitation on what one may infer without a large-scale randomized controlled field study has led many investigators to embrace a radically different alternative: intensive single-case studies. Case studies are, historically, one of the important data sources in developmental psychology and particularly in studies of child language; baby biographies provided data long before anyone studied children in laboratory settings, and students of child language continue to provide valuable insights into language acquisition by recording in extraordinary detail the language acquisition of their own children. Contemporary interest in single case experiments has had a revival mainly within behaviorism and neobehaviorism (see Hersen & Barlow, 1976); observational, nonquantitative studies never really died out in clinical psychology or in linguistics.

The current enthusiasm for case studies may be understood, in part, as a reaction to the limitations on the inferences that may be drawn from feasible group-comparison studies. In practice, it is seldom feasible to use randomization in creating treatment and control groups large enough to yield the benefit of the randomization: equalization of groups on all known and unknown background variables. Alternatives to randomization are always less satisfactory than the real thing; indeed, they often create the illusion of control while actually providing only limited control of a few known background variables. For example, controlling for sex, SES, and I.Q., to name a few background variables typically used in the social sciences, leaves uncontrolled countless other variables, unknown as well as known. Adding variables known to be important quickly results in the generation of designs with enormous numbers of cells and, consequently, in the need for an enormous sample size. Furthermore, the list of potentially important control variables is unlimited; one can always think of something else worth including, and one always realizes that one's ability to choose the right variables is limited, both by one's intuition and by the data available from previous work. Randomized assignment of large numbers of subjects to groups solves this problem, yet the only feasible possibility for most investigators conducting group-comparison studies is to control for a few known variables or to use randomization without the large n needed to have randomization achieve its aim.

A worse possibility also occurs. Namely, in order to manage the large sample size needed for randomization to be effective or for all cells to be large enough, investigators working with limited resources must sometimes be driven to cutting where they can. They cut the intervention and they cut the measurements. Instead of providing large amounts of high-quality intervention measured using carefully administered, time-consuming instruments, they give small amounts of the intervention to many subjects and they administer quickie instruments. This option is especially undesirable for the same reason that uncontrolled research is undesirable. One never knows the impact of the intervention. Specifically, one never knows whether the intervention would have worked if used richly, and one never knows whether it would have shown effectiveness if its impact had been measured carefully.

Clearly, the big danger in uncontrolled research and in compromise research efforts intended to achieve some control despite limited resources is a falsification of the picture of what happened in whatever one was doing. The attraction of single-case research lies partly in the hope that carefully conducted single-case studies can avoid that falsification yet remain feasible. In short, while one may sacrifice inference from the sample to the population as a whole, one may at least know what really went on in the sample. Practical considerations also mean another sacrifice: It is considerably easier to publish even poorly controlled group studies with superficially measured data than to publish case studies. This point was brought vividly to the attention of the project staff in the following way. Having written a case study, we wrote to the editor of a journal describing the paper and asking whether the journal would be interested in it. In replying to our letter, the editor stated that the case sounded as though it would be interesting to the journal's readers but added: "I wouldn't call it a case study, however, unless you intend it to be a short report located in the Letters to the Editor section."

Recommendations

The experience of this project with regard to the group-comparison versus single-case issue is a mixed one. For this project, the first aim of which was the development of the intervention program, allocating resources for conducting a large-scale randomized control field study was an impossibility. The compromise solution, a group comparison without randomization, has exactly the weaknesses that Gilbert, Light, and Mosteller (1975) describe. Specifically, without randomization, we cannot know what would have happened had we had the control of randomization. On the other hand, the group-comparison results are not valueless: They do suggest that, in general, the trained children in the higher cognitive level group did somewhat better than the untrained children of comparable cognitive level, while the trained and untrained children in the very low cognitive group did not differ significantly. Clearly, many single-case replications would have been needed to suggest this point, and a great many would have been needed to provide an overall picture of how, as a group, the children fared. That is, the major benefits of the group comparison conducted in this project are: (a) to suggest that the intervention is potentially beneficial and worth investigating in a much more carefully controlled study and (b) to suggest that the specific variable of cognitive level matters a great deal.

On the other hand, as Hersen and Barlow (1976) would predict, the group-comparsion results give virtually no sense of what happened during the course of the intervention, no information about individual change processes, and no feel for the program or for the relationship between the individual children and this intervention.

The case studies, however, do exactly those things. Probably the greatest advantage of the case approach in research like this is that presenting cases allows one a vehicle for systematically presenting rich, detailed observations that in an exclusively group approach must appear as mere anecdotes.

Our recommendations for future evaluations, then, are the extremes: large-scale randomized studies and/or intensive single cases in which data are collected at very frequent intervals. Furthermore, as noted elsewhere, it is apparent that any evaluations of this intervention must take the child's cognitive level into account.

Quantification Issues

The current dissatisfaction with quantification in language assessment consists, in part, of a dissatisfaction with standardized tests of language ability and, in particular, dissatisfaction with those now available, as discussed elsewhere in this report. In addition, one increasingly finds disillusionment with quantitative measures in general and the suggestion that such measures can play, at most, a very minor role in contributing valid information about children's language (e.g., Danwitz, 1981).

As the cases presented in this report show, the project's experience with efforts to quantify the children's expressive language have been, in general, very satisfactory. For the cases presented, and for others as well, the quantification meshed closely with clinical impressions. There is, however, one important exception to this general satisfaction. Specifically, the system used to code the subjects' speech acts was clearly not a success. The problem does not lie in the system itself; the Dale (1980) system that was adapted for our purposes was not intended to measure pragmatic development in this particular population. The problem is that no reasonable alternative was available at the beginning of the project and, indeed, a system different enough to promise greater sensitivity and usefulness does not yet seem to be available.

Recommendations

The experience of this project is that quantification provided a very useful and clinically meaningful way to summarize information about the children's language. The only specific dissatisfaction is with measuring speech acts. In recommending work on the development of measures of pragmatic development, we are simply recommending research that the majority of researchers and clinicians in this field would urge as well.

Considering the great dissatisfaction in the field with standardized tests of language and the inappropriateness of these tests for this population, it seems probable that clinicians and researchers will increasingly use speech-sample rather than test data. Consequently, there is a great need for rigorous research on methods for collecting and quantifying speech-sample data from young language-disabled children.

In particular, relatively little is known about the influence of the length of time sampled on he measures derived from samples collected from young language-disabled children: For which measures does size of corpus affect magnitude? Similarly, research is needed on the influence of the stimulus materials, sample collector characteristics, and the collector's behavior.

In most research situations, the typical instruction given to the children is, in effect, an instruction to produce utterances within certain delimited categories of speech acts. Instructions like "Tell me what is in this picture" (Siegel, 1962) are, pragmatically, requests for labels and descriptions. Instructions like "Tell me a story about the picture" (Minifie, Darley, & Sherman, 1963) are requests for narratives. Instructions typically do not call for a wide variety of uses of language. Furthermore, instructions seldom encourage the child to use words in ways that are relatively easy for language-disabled children: Children are asked to use words to make explicit statements of propositions about unfamiliar things rather than to use words to express requests, demands, and comments about people and objects in the immediate environment. A task designed to elicit what Bernstein (1971) called "the elaborated code" is a task beyond the powers of these children. Furthermore, such a task, if followed, produces a narrow range of speech acts, yet one piece of information one may want from the sample is information about whether or not the child uses a wide range of speech acts.

Research concerned with nondisabled children provides little help in the form of information or standardized procedures to the researcher concerned with disabled children. For example, in collecting speech samples from nondisabled children, investigators often rely on pictures, for example, CAT (Children's Apperception Test) cards or photographs cut from magazines. For language-disabled children, however, these materials are not universally appropriate, since the population contains children who are quite unable to interpret drawings and unable to recognize even familiar objects in photographs. Furthermore, looking at pictures is most unmotivating to many of these children; pictures may be something to tear up, bite, or drop, rather than something to examine with interest.

Even when the issue of generalizing from nondisabled to disabled populations is put aside, methodological studies concerned with speech samples are less informative than one might hope. In particular, technological change has greatly affected the potential for collecting and analyzing language samples, yet the actual use of these data has not even begun to keep pace with the possibilities. Probably the most blatant instance of this point is the persistence of recording children's speech by hand despite evidence dating back to at least 1934 (Betts, cited in McCarthy, 1946) concerning the vast superiority of mechanical over hand recording. Hart and Risley (1975), for instance, collected spontaneous speech data from young children by having adult observers write down by hand "everything the child said." Cowan, Weber, Hoddinott, and Klein (1967) attempt to justify the use of hand-recording by referring to the work of Siegel (1962). In what is evidently a reference to an earlier study of Siegel's noted in his 1962 paper, Cowan et al. state that: "There appeared to be little advantage in tape recording Ss' responses since the reliability of MLR (mean length of response) scores transcribed by different typists is low (Siegel, 1962)" (1967, p. 194). What Siegel actually concluded is that: "The data concerning reliability may be taken as evidence that tape recordings provide a practical method for obtaining and analyzing language samples into MLR and that MLR is a reliable measure." (1962, p. 94). Siegel clearly demonstrated that adequately trained typists "can reliably prepare transcripts from these recordings" (1962, p. 94). To a researcher who has attempted to write down by hand "everything the child says," any report that someone else has performed this feat is, frankly, unbelievable, particularly if "the child" is either talkative or difficult to comprehend or both.

In short, despite the considerable time required to collect, transcribe, and code speech-sample data, this method of obtaining quantitative measures of the expressive language of children with language disabilities is one that seems likely to increase in use in the field, and one that merits methodological studies.

Implementation

The major point about the implementation of this intervention that emerges from previous chapters of this report is that the intervention is highly adaptable to a variety of uses in different settings. Furthermore, it is clear that the intervention could be adapted for uses different from those investigated in this project.

Recommendations

Discussed briefly here are a number of groups to whom this program might be extended; these extensions involve both program recipients and trainers.

Hearing impaired and/or signing populations. Children with hearing impairments that interfered with hearing normal conversation were defined as ineligible for participation in this project. Furthermore, the project was specifically aimed at facilitating the development of spoken language. Language delays, however, are one consequence of hearing impairment. Furthermore, signing is frequently used in conjunction with interventions aimed at children without as well as with hearing impairments. Developing this intervention for use with hearing-impaired children and/or for use in conjunction with signing was outside the scope of this project. Such a development, however, is an obvious next step. In particular, the games and materials developed in this project (Volume II of this report) are appropriate in form and content for young hearing impaired and/or signing children, and the adaptation of the program for those children would be largely a matter of making minor adaptations in playing techniques and intervention strategies.

Children in need of language stimulation. The children for whom this intervention was developed were seriously language-disabled. There are, of course, many children who are deficient in language skills yet who function at considerably higher linguistic and communicative levels than do these children. The games described in Volume II of this report, particularly the more difficult games, appear to be an appropriate and entertaining means of providing such children with language stimulation. Adapting this program for those children would be a relatively easy task; many games developed in this project would be useable with no alteration. Other games somewhat more complicated in structure and content than those we developed would be easy to devise.

Adolescents. In the course of this project, we received numerous comments from participating practitioners and other professionals about the obvious appropriateness of this approach for adolescents with relatively serious developmental disabilities affecting language. The extension of this intervention to that population would require a change in the particular materials used in this project; the materials intended for preschoolers would be of little interest to older children and adolescents and would not meet their communicative needs. Extending the intervention to that population, then, would mainly involve the development of games using age-appropriate materials and content.

ESL program recipients. Another suggestion we frequently received was that the communication games be used in conjunction with ESL (English as a Second Language) programs for adults. Suggestions of this nature generally stressed the importance of helping people to learn English in the context of practical, communicative use. It is clear, for example, that adults with no English have an immediate need to learn to use English to shop for food; devising communication games to help them to do that would be relatively simple. An important point about the possibility of this adaptation of the program is that these games demand and foster interaction among participants; the games would provide a structure for helping adults to use English in actual communicative interactions with one another. Clearly, this extension would involve major revisions of all aspects of the program.

Parent training. Because the games are easy to learn and to use, the single most obvious extension of the program is the training of parents of language-disabled children in the use of the program. Clearly, the most cost-efficient way to do so would be to train teachers to train the families of their students. This extension would involve no changes in the program, but rather, would involve the development of techniques for training families and for training teachers to train families.

Training materials. Training adults to implement the intervention, as chapter 9 of this report discusses, should be as hands-on and experiential as possible. In general, the closer training is to the actual situation in which the trainee works, the better. A next step in the development of training procedures should be the production of video training tapes. While the book produced by the project explains the program in detail, many potential users of the program simply do not read; they attend workshops, enjoy practice exercises, and otherwise learn about the games by watching and participating. Trainees in this project who preferred to learn experientially hence used the manual as a reference book, not as a text. The availability of materials like videotapes for use in training would hence be a valuable adjunct to dissemination.

Intervention

In the first chapter of this report, the program developed in this project was labeled, somewhat facetiously, a "conversational didactic" one. This program permits practitioners to engage in genuinely conversational remediation activities without abandoning the structured context and many other characteristics of traditional, didactic approaches to language intervention.

As noted in chapter 1, the entire tradition of special education and of speech therapy emphasizes the use of specific, structured, explicitly didactic remediation procedures. Practitioners who do not engage in "work" are apt to be defined by others and to define themselves as remiss. Contemporary research and theory concerned with language acquisition and development, however, stress the interpersonal, contextual nature of language learning. Language learning is increasingly viewed as something that happens between people rather than within the child alone, a view implicit in the writing of Siegel (1967) and Mahoney (1975) a number of years ago. Language acquisition is something that we do in interaction with the child; language is less something that we teach to the child than something that we join the child in creating. The intervention developed in this project, then, is a compromise between the traditions and preferences of practitioners and the understanding of language and language acquisition as interpersonal processes.

The practical value of reaching such a compromise does not, however, settle the structured versus unstructured question, nor does it provide any enlightenment concerning similarities or differences in change mechanisms and processes within structured and unstructured conversational interventions.

As discussed in chapter 1 of this report, didactic and nondidactic conversational approaches to language intervention share a common ideal image of what should go on betwen therapist and child. The therapist operating fom either model uses similar tactics; he or she creates opportunities for communication, creates conversational openings for the child, incorporates whatever the child says or does into a conversational framework, and otherwise imposes a conversational structure on interaction. The nondidactic model has an obvious advantage over the didactic: The context of the conversation is noncontrived. The didactic model, however, provides the opportunity for repeated practice, and the "unreality" of the game playing has the advantage of all play, namely, that no really serious consequences ever follow. In practice, it happens that nondidactic approaches tend to emphasize nonverbal as well as verbal communication, while this approach clearly places much greater value on verbal than on nonverbal communication. This area of contrast, however, seems to be a function of the particular individuals working in the two approaches rather than one necessarily associated with the models themselves.

The experience of the project staff in implementing the intervention and in observing practitioners making the transition from the traditional to the conversational approach suggests one key area for investigations of process within conversationally-based interventions, whether didactic or nondidactic. Specifically, our experience as clinicians and as trainers strongly points to the role relationship between the adult and child as the central characteristic of this approach. Indeed, when the clinician takes on the role advocated in this approach, the role of conversant who exchanges information with the child, the difference between a didactic and a nondidactic approach becomes blurred. In contrast, when a clinician tries to play the communication games while clinging to the traditional role of authoritative adult who imparts information to the child without receiving any and who tests rather than teaches the child, the games cease to be communication games and the process of playing becomes nonconversational.

From a theoretical viewpoint, this role relationship is of interest because the role advocated in this intervention (see Volume II of this report) and in conversational approaches in general (e.g., MacDonald & Gillette, 1982) is very close to the kind of parental role described by students of normal, spontaneous language acquisition. Indeed, Cook-Gumperz's (1979) descriptions of interactions between mothers and children is an accurate description of what constitutes implementing this intevention in accord with the intent of the program. This similarity suggests, of course, that whatever change mechanisms account for normal language acquisition also account for the change induced in deliberate conversational intervention.

From a clinical viewpoint, the relationship is extremely important because of issues that arise between therapist and child. Unhappily, however, the field of early childhood language intervention provides little incentive to pursue theory or research concerning these clinical issues. For example, while the concept of resistance has a long and complex history in theory and research concerned with psychotherapy, one also encounters a comparable phenomenon in conversational language intervention. One finds, just as Freud (1920/1949) did, that at some points, all of one's efforts to help are suddenly blocked by what appears to be a resistance to change. In language intervention, one feels that at some points, the child simply does not want to talk or to talk differently, despite the fact that it is clearly to his or her great benefit to do so.

Phenomena reminiscent of countertransference issues in psychotherapy also arise. For instance, having encountered the child's resistance, one may find oneself quite irrationally wondering whether one really should try to help the child to talk. Why bother to push for change? Maybe one is asking something that one has no right to ask.

Another example is induction: Like the psychotherapist who finds himself or herself unwittingly inducted into a family's dysfunctional system (Umbarger & Hare, 1979), the therapist using a conversational approach to language intervention may discover that he or she has inadvertently been inducted into the child's dysfunctional communication system. Specifically, one sometimes finds oneself seduced into relying on nonverbal channels of communication. Instead of telling a child to go somewhere, the inducted therapist picks up the child and carries him. Instead of telling the child something verbally, the inducted therapist adopts the child's practice of pointing intead of using words.

These three phenomena are only a few illustrations of phenomena that are clearly clinical in nature and that are important because they obviously have the potential to interfere with the process of change. They are not, however, issues of concern in traditional approaches to language remediation, nor are they issues of concern in research.

Recommendations

The intervention developed in this project, together with other conversational approaches to language intervention, highlights the need for research and theory treating language intervention as a clinical process akin to psychotherapy as well as a more purely educational process. In particular, the experience of this project suggests that the transition from traditional to conversational language intervention, with a concomitant change in the role the therapist plays, highlights interpersonal phenomena that are not of concern in traditional language remediation. These issues are of interest for both practical and theoretical reasons. In clinical situations, phenomena reminiscent of resistance, countertransference, and induction in psychotherapy can impede the child's progress. The occurrence of these phenomena also raises theoretical questions that are not of concern in traditional approaches to language disability. For example, how do we understand resistance when it refers to a young, language-disabled child's resistance to help in learning to talk and not to a psychotherapy patient's clinging to a neurosis? Is it necessary to accept the psychoanalytic explanation for both phenomena?

> Resistances invariably confront us when we try to penetrate to the hidden unconscious thought from the substitute offered by the dream-element. We may suppose, therefore, that something very significant must be concealed behind the substitute; for, if not, why shouuld we meet with such difficulties, the purpose of which is to keep up the concealment? When a child will not open his clenched fist to show what is in it, we may be quite certain that it is something which he ought not to have. (Freud, 1920/1949, p. 105)

In language intervention, must we accept the improbable idea that the child's resistance is a concealment of forbidden impulses, that the clenched jaw conceals something the child ought not to say? What other explanations can we offer?

The point is that these phenomena are not only unexplained, they are also largely unobserved and undocumented. The experience of this project, then, suggests that clinical language work has more in common with clinical psychology than is usually supposed and that clinical issues between therapist and child are a fruitful topic for futher theory and research.

Summary

With regard to the evaluation, the group-comparison and single-case approaches both had assets and weaknesses. Recommendations for future evaluation of this program are for the extremes: large-scale randomized studies and/or intensive single cases with data collected at frequent intervals. With regard to the current controversy over the meaningfulness and usefulness of quantitative measures of child language, the project's efforts to quantify the children's expressive language were largely satisfactory. Recommendations are for methodological studies concerned with speech-sample data from this population.

Because the language intervention program emerges as highly flexible, it could be adapted for use with other populations, including hearing-impaired and/or signing populations and developmentally delayed adolescents. Training parents to implement the program is an obvious next step.

Observations of practitioners making the transition from traditional to conversational or communicative language intervention, as well as observations of the clinical work of project staff, suggest that the role relationship between clinician and child is a key characteristic of this approach. The change in role relationship accompanying the transition from traditional work to work based on pragmatics highlights interpersonal phenomena important in clinical practice. Observations of processes reminiscent of resistance, countertransference, and induction in psychotherapy suggest that clinical language intervention has more in common with clinical psychology than the literature in the field of language intervention would suggest. Interpersonal processes involving clinician and child, as well as parent and language-disabled child, are a fruitful topic for future research.

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APPENDIX A

INTERVENTION PROGRAM

Language Intervention:
A Pragmatic Approach

Barbara Hecht
Stanford University

Susan Conant and Milton Budoff
Research Institute for Educational Problems
Cambridge, Massachusetts

Robert Morse
Palo Alto, California

Address editorial correspondence to:

Susan Conant, Ed.D.
Research Institute for Educational Problems
29 Ware Street
Cambridge, Massachusetts 02138

617-868-0360

Abstract

The approach to language intervention described in this paper provides a means of teaching pragmatically appropriate and effective uses of language in conversational contexts while simultaneously teaching the production and comprehension of specific linguistic forms. The approach, developed in work with language-impaired young children, consists of a series of communication games. These games, which focus and intensify certain characteristics of conversational situations, teach vocabulary, syntax, and articulation as devices for serving the same pragmatic functions these devices serve in ordinary conversation. The games integrate the advantages of the traditional language lessons and those of incidental teaching.

Language Intervention: A Pragmatic Approach

The goal of any language intervention effort is to enhance children's ability to use language as an effective means of communication in their everyday lives. Recent research on pragmatics, particularly on children's development of pragmatic ability (e.g., Bates, 1976; Ochs & Schieffelin, 1979), has led teachers, clinicians, and researchers to embrace the ideal of teaching meaningful language in conversational contexts (Seibert & Oller, 1981). This concept has been difficult to translate into specific intervention strategies. Incidental and interactive teaching methods (e.g., Allen, 1980; Hart & Risley, 1975; Rieke, Lynch & Soltman, 1977) encourage teachers to converse with children and to create opportunities for incidental teaching. When, however, a child clearly needs to work on specific syntactic, semantic, or phonological forms, practitioners rely heavily on conventional language lesson approaches like asking children to repeat adult pronunciations, mimic adult sentences, label objects, or otherwise produce language for no apparent communicative purpose. Such teaching approaches reflect a continuing reliance on a context-free, structure-oriented approach to language teaching rather than a communicative one.

This paper describes an alternative approach to language intervention for young language-handicapped children. This approach, which consists of a series of communication games, provides a means of teaching pragmaticallly appropriate and effective uses of language in conversational contexts while simultaneously teaching the production and comprehension of specific linguistic forms.

Communicative and Noncommunicative Approaches

The difference between communicative and noncommunicative methods of language teaching is evident in the following example. Suppose that a teacher wants to help children to use words to request juice during snack time. The teacher knows that the children want and expect the juice. The children know that the techer has a supply of juice available. In an effort to inject a need for talking into this situation, the teacher decides to have the children ask for juice before it is given to them. If the child wants the juice, he or she is required to use words. Sometimes the child must say *juice*, and sometimes the child must use a full sentence, such as: *I want juice*. Although the aim of having the child use words to ask for juice is to help the child to use language communicatively, the child's production of *I want juice* is, in this context, noncommunicative. The child does not tell the teacher anything that the teacher does not already know. The child has nothing to communicate except a willingness to comply with an arbitrary demand.

Consider an alternative. The teacher provides two pitchers of juice at snack time, one containing apple juice, the other containing orange juice. The teacher gives cups to the children and holds the two pitchers of juice. The teacher then asks: *What* kind of juice do you want, apple juice or orange juice? In this situation, the children have information to communicate that the teacher does not already have. The children need to do something with words, namely, to inform the teacher of their choices of juice. The child who says apple juice uses words to make a specific request. In this example, the teacher's method and aim are communicative. In the first scenario, the teacher witholds juice unless the child asks. In the alternative communicative approach, the teacher does not know what kind of juice to give the child unless the child communicates a choice.

An example from a formal, structured teaching situation also illustrates the difference between communicative and noncommunicative methods. A teacher is playing Lotto with a child. In order to make Lotto a game involving words, the teacher institutes the following rule: When the teacher holds up a picture card, the child is permitted to claim the card if and only if the child correctly names the picture shown on the card. The teacher holds up a picture of a cat, and the child may claim the picture card by saying: Cat or I want the cat. The child's utterance does not tell the teacher anything new. The teacher already knows that the picture shows a cat. The child has no new information to communicate.

In the communicative approach, the need to use words can be created in a different way. Instead of displaying the picture, the teacher deliberately conceals the picture while describing it (I have a cat. Does anyone have a cat?). When the teacher and child reverse roles, the child, who conceals the picture, needs to say cat or Who has the cat? in order to inform the teacher about which card is being used. The teacher does not know until the child speaks which card is being played. This game is structured in such a way that information is not equally available to the participants. Consequently, the participants need to talk in order to play.

Noncommunicative methods are characterized by arbitrary demands for talking. If the child does not talk, then the teacher refuses to do something. In contrast, communicative methods create a genuine need for talk; if the child does not talk, then the adult does not know how to respond. In the noncommunicative examples, the child does not do anything with words except comply with an arbitrary demand. In the communicative examples, the child does something. The child who says apple juice selects something. The child who says cat tells the teacher which card is being played. The child actually uses words to do something.

Many recent recommendations for language intervention strategies oriented toward pragmatics (e.g., Miller, 1978; Siebert & Oller, 1981) focus on unstructured, informal, or naturally-occurring situations. In contrast, the communication games described in this paper are useful in the setting of the traditional language lesson. This communication games approach is specific. It is not an exhortation to provide opportunities for conversation, to give topic relevant responses, or to take advantage of opportunities for eliciting language. The purpose of the communication games is to create deliberately the kinds of communicative situations for which one must wait in incidental teaching and, furthermore, to structure those situations so that they make demands for particular linguistic elements and constructions.

Program Development

The approach described in this paper was developed in work with 60 young children who have a wide variety of serious language impairments. Wyatt (1969) provides an excellent characterization of children like these when she describes "poor communicators," children who have "generalized, all-pervasive deficiencies in verbal communication." (p. 254). They have small vocabularies, and their articulation is often imprecise. Their spontaneous speech is scanty and consists of brief utterances. They rarely initiate conversation, and they use language to serve only a limited range of pragmatic functions.

The diagnoses of these children include Down's syndrome, Cornelia de Lange syndrome, spina bifida, cerebral palsy, seizure disorders, abuse and neglect, brain injury, developmental delay, and language delay. The children, who range in age from 3 to 6 years, attend mainstreamed and special needs schools. Practitioners trained in using the games have included speech and language pathologists, teachers with and without training in special education, student teachers, and aides.

The Communication Games Approach

The communication games range in difficulty from simple games suitable for children who produce only a few words to challenging games for children who produce multi-word utterances. The games use a variety of formats, described in the Appendix, and teach a variety of linguistic content. The materials used in the games are toys, drawings, and photographs, including photographs of the toys used in the games and photographs of the participating children. While the level of difficulty, the format, the materials, and the content may differ, the basic structure of the game playing process is the same in all games.

Roles. In every game the participants share two roles: those of "speaker" and "listener." The speaker has information unavailable to the listener that the listener needs in order to play the game. The listener, fulfilling a complementary role, needs the information the speaker has. These roles may be shared by more than two players. For example, one player may be the speaker while two or three players are the listeners.

Rules. All of the games have only one basic rule: Use words. Specifically, the speaker must communicate the needed information to the listener by talking.

Turns. The players take turns as speaker and listener. The child first learning to play a game begins in the role of listener. Once the child shows some competence as the listener, the players reverse roles and continue to do so as the game goes on.

Process. The process of playing any of the communication games takes place in four steps.

In the first step, one player, whom we shall call Player A, takes the role of speaker, and the other player, Player B, is the listener. Player A conveys information otherwise unavailable to Player B, and Player B makes a move in the game on the basis of that information.

In the second step, the players evaluate the effectiveness of the communication: Did the message get across?

Third, the players exchange roles. Player A is the listener and Player B is the speaker. Player B now has the information that is unavailable to Player A and conveys that information. Player A makes a move on the basis of Player B's message.

Fourth, the players again evaluate the effectiveness of the communication.

The process then begins again at the first step; the players reverse roles. When a child is first learning a game format, Player A is the adult; the adult models the production of messages before the child is expected to try out the role of speaker. Often Player A and Player B are both children, while an adult temporarily fills in as speaker or listener, facilitates the children's communication, and otherwise monitors the playing of the game.

One example of a simple communication game illustrates the playing process and the characteristics of the communication games approach. In this game, which focuses on verbs of position, the players are a teacher and one child. The materials consist of photographs showing each player sitting, standing, and lying down. The teacher initially plays the role of speaker by holding the pictures of the child and directing the child to do whatever is shown in the first picture (e.g., "Billy, sit down"). If the child sits down, the teacher shows the picture to the child and discusses the match between the picture and what the child has done (e.g., "Yes, you are sitting down, just like the picture"). If not, the teacher and child compare the child's current position with the position in the picture: "Whoops! In the picture you're sitting. Like this."

When it is clear that the child understands the directions and can play the role of listener fairly successfully, the teacher and the child exchange roles. The child, as speaker, chooses a picture of the teacher and directs the teacher.

This game has only one rule: "Use words." That is, the speaker holding the picture must tell, not show, the listener what to do and must not display the picture until the appropriate time.

Program Characteristics

Recent research in language acquisition indicates that children learn to talk by having something to say in conversations with interested adults (Bloom, 1972; Cook-Gumperz, 1980). The games create situations that resemble conversational situations but that focus and intensify certain characteristics of those situations.

The preceding example illustrates the characteristics of all the communication games described in detail by Conant, Budoff, and Hecht (Note 1). These characteristics are:

Communicative goal. Each game has some simple goal that can be reached only by means of verbal communication among players. In the preceding example, the goal is to have the listener's position match that shown in the photograph. In other games, the goal may be to have pictures match, to arrange a series of toys, or to guess the location of a hidden object.

Feedback. Feedback comes from the match or mismatch between the picture and the position of the listener. The child sees both the picture and the listener's actual position; seeing the match or mismatch between the two allows the child to determine whether a message was effective. The listener who cannot understand the speaker and who needs to know what to do next must provide feedback in the form of requests for clarification. In all cases, the feedback is about the adequacy or inadequacy of the communication, not about the extent to which an utterance meets some arbitrary standard of correctness.

Context. Speaking and listening in this game involve issuing and comprehending directives. The child is not taught to comprehend and produce labels in a clinical setting, then expected to generalize to the use of words as directives in the real world. Rather, the child learns the linguistic forms in the context of meaningful, directive use. This game creates a reason to use verbs that specify position.

Opportunity for practice. As in any game, the players repeat the same moves. The child has many turns and thus many opportunities to produce and comprehend forms without rote drill. As the child becomes proficient, another child player can be added. The first child can then show off his or her new ability in the game as a "teacher" and can practice the forms with a new conversational partner.

Incidental learning. Although a primary point of these games is to focus on specific linguistic forms, the games themselves provide many opportunities for the incidental learning of other conversational skills. In taking turns, requesting clarification, signalling attentional information, and otherwise regulating the flow of verbal interaction (Corsaro, 1981), the child learns about conversational structure.

Models. The games provide the opportunity for adults and other competent players to model effective language use. The child is not simply placed in a situation in which there is a need to use language. In the role of listener, he or she is first provided with a model of how to use languge to meet that need.

The practitioner's role. Since the game materials themselves, rather than adult evaluations, are the basis of feedback, the practitioner's role is different from that often assumed in work with language-disabled children. In traditional language lessons, the teacher demands target responses during the course of interacting with children. In these communication games, the teacher creates the need for selected kinds of communication through the design of each game. The teacher, for instance, may design a game that requires two-word descriptions but does not insist upon two-word utterances when one-word utterances are communicatively adequate. The teacher's feedback means: "I can or cannot understand you," not "I accept or reject that."

While playing the games, the teacher serves as a model, a facilitator, an interpreter, and a clarifier. The teacher converses with the children, expands and extends the children's utterances (Cadzen, Note 2), rephrases his or her own statements and those of the children, enforces the rules of the games, and otherwise performs most or all the functions that adults usually perform when talking with children (Cook-Gumperz, 1979; Corsaro, 1979). Like the parents of the normally developing children Brown and Hanlon (1970) describe, however, the teacher attends only to errors of meaning, not to errors of structure apart from meaning.

Participants. Although children are generally introduced to the communication games in one-to-one play with a teacher, the games can be played by a teacher and two or more children, and by groups of experienced children. Children are particularly effective teachers in these games; they have no qualms about giving direct feedback about the adequacy or inadequacy or communications. In mainstreamed classes, children without language handicaps serve as particularly effective models.

Linguistic Content of the Games

While the structure and playing process remain constant, the particular linguistic content of games may be varied to teach vocabulary, grammatical constructions, or articulation.

Because the language required in the games is language used to perform meaningful interpersonal acts, the children learn to use words, grammatical constructions, and clear articulation to "do things with words," to borrow Austin's (1962) phrase. In the games, any utternce has an illocutionary force as well as a locutionary meaning. The games, in short, teach vocabulary, syntax, and articulation as devices for serving the same pragmatic functions these devices serve in ordinary conversation. The teacher may choose to focus on the linguistic elements critical to the child's progress, changing the linguistic demands of the game as the child progresses.

Vocabulary. All the games, at any level of complexity, can be used to expand children's vocabulary. Normally developing children, even at the one-word stage, use words not only to name objects but to indicate the roles objects play in the ongoing situation (Clark & Clark, 1977). For example, a child may use the word *down* to ask to be put down, to show the location of something, or to comment on his own action of sitting on the floor. In a similar way, the communication games give children immediate opportunities to use words in a practical situation, since a new word in the context of a game is not just a name for a picture but is a means for making requests, giving directions, asking questions, and regulating listeners' responses.

Communication games allow the practitioner to introduce one or two new words at a time in a situation where the children must distinguish the new words from other words already known. Games can be devised that require children to discriminate among possible referents (e.g., a variety of color words or various landmarks in toy village), some of which the child already knows, plus one or two new ones. New words can be introduced and modelled by the "speaker" in a way that maximizes the possibilities of success. The supportive context can be gradually reduced as the child learns the new words.

Grammatical constructions. If a child produces single-word utterances but does not combine words into larger units, games that demand two-word utterances are appropriate. For instance, one game is played with a boy and a girl doll in a toy house. Accompanying photographs show each of the two dolls in various locations (in the kitchen, the bedroom, the bathroom, or outside). The speaker in the game selects one photograph and tells the listener where to place a doll so that the arrangement matches the photograph. In order to specify effectively which doll is in which location, the speaker must use words for both an agent and a location (e.g., "boy outside").

This sort of game does not lead children who produce one word at a time instantaneously to speak in two-word utterances. Children playing these two-word games seem to go through the same stages that have been described for many normally developing children (Bloom, 1973; Clark & Clark, 1977; Scollon, 1976). At first they produce communicatively inadequate one-word utterances (e.g., either "outside" or "boy"). When the listener demands clarification, the children eventually produce the second term. At the next stage, they produce two terms, but as separate utterances (e.g., "Boy. Kitchen." or "Kitchen. Boy."). Eventually, they produce the two terms without a pause, as a two-word utterance (e.g., "Boy kitchen.").

In multi-word games, the game creates a need for encoding more and more information in an utterance. To help the child use agent-action-object constructions, for example, the teacher designs games in which those terms are all necessary for adequate communication.

Articulation. Communication games may be used for work on articulation errors that affect meaning. Articulation games are designed by choosing objects designated by words that differ only in the articulation of a single sound. For example, the game materials for children who often omit final consonants illustrate pairs of words that differ only in the final consonant: "bell/belt," "pie/pipe," and "gum/gun." Pictures of these items can be used in a variety of the game formats presented in the Appendix. No matter what the format, the speaker must specify one object of the pair. If the speaker does not produce the final consonant, the utterance is ambiguous and hence unclear to the listener. The listener thus requests clear articulation in a situation where there is an obvious reason to provide clear speech sounds.

Weiner and Ostrowski (1979) found that preschoolers systematically changed and improved their articulation when they thought they were not being understood. In that study, the adult listeners pretended to be uncertain about what the children had said. In the context of the communication games, no pretense is necessary. The need to be clear is genuine; the requests for clarification are genuine; yet the game context is one in which the consequences of error are not discouragingly serious. Speaker and listener are playing a game.

Discussion

Games are appealing teaching devices. When played in a lively fashion, they are fun. They permit concentrated practice on target language. Children practice sounds, words, and constructions many more times than would be possible if one waited for incidental teaching opportunities to occur. Games permit the practitioner to focus on specific aspects of language; in selecting or designing games, practitioners can direct attention to areas of language in which particular children need help. The use of games is also advantageous because games provide a playful context in which children's errors or failures do not have serious consequences. When one uses an explicit game, one may avoid creating the problems that sometimes evolve in implict games like "You Can't Have It Until You Ask For It."

There are a number of limitations involved in traditional language drills. Elicitation devices like "Show Me The..." and "Say What I Say" have been criticized (e.g., deVilliers & deVilliers, 1978; Seibert & Oller, 1981) because they bear little relation to everyday language use. One problem with traditional strategies is that they involve very limited uses of language. Specifically, the children are called upon to imitate or to supply target responses, but they are not expected to use language in initiating conversation, in expressing wants and needs, in demanding materials, or in performing countless other acts able speakers take for granted. These traditional language lessons, in other words, involve no communicative intent.

Practitioners are frequently urged to help children develop pragmatic as well as syntactic, semantic, aand phonological skills, yet recommendations about how to do this often fail to provide guidelines about effective ways to focus on specific, practitioner-selected linguistic forms. Practitioners are urged to converse with children and to create opportunities for incidental learning. When, however, a child needs to work on specific linguistic skills, and those opportunities fail to occur or occur only infrequently, practitioners may see no alternative to conventional noncommunicative drills.

In providing a pragmatic alternative, the communication games described in this paper address the weaknesses of both incidental teaching procedures and of conventional language lessons. Unlike methods that require children to talk without obvious communicative purpose, the game context creates a genuine need to convey information in a conversational setting. Since the context is one of play, talking in itself does not become a potential battleground. Teachers can tailor their games to each child's needs, focusing on particular semantic or syntactic content. They need not wait for opportune moments. Teachers can create those opportunities themselves by using structured games that offer children a clear and directly motivated set of situations in which to improve skills in using language to communicate.

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APPENDIX

Communication Game Formats

In all of these games, a speaker and a listener alternate roles, and in all formats, there is a need to convey information. There are a number of reasons for using different formats. First, the use of different formats provides opportunities for generalization to new contexts. Second, some formats are more readily adapted than others to focusing on certain pragmatic devices. For example, Action-Directive games stress the use of language to direct the actions of others; Guessing games provide a context for requesting information and responding to questions. Third, different formats make differing cognitive and motor demands on the players. For example, Hiding Games are especially appropriate for children functioning at very low cognitive levels. Finally, the use of novel situations maintains the interest and excitement of both teachers and children.

Hiding Games

Hiding games are simple guessing games in which the listener hides a small object and the speaker guesses its location. This simple game format, which does not presuppose matching skills, seems to be helpful in developing conversational skills that make the more complicated games flow smoothly.

Hiding Games with Pictures. The teacher places a small set of pictures (drawings or photographs) face up on the playing surface. The speaker closes and/or covers his eyes. The listener hides a small, flat object (e.g., coin, poker chip, small piece of paper, sticker) under one of the pictures. The speaker is then told to open or uncover his eyes (e.g., "Ready!"). The speaker guesses where the object is hidden. He must "use words"; guesses must be verbal. Pointing does not count. When the speaker makes a guess, the listener looks under the picture to which the speaker refers. The guessing continues until the hidden object is found.

The players then reverse roles.

If there are more than two players, one player is the listener, the player who hides the object. The other players are all speakers who cover their eyes and take turns guessing the location of the hidden object.

Narrative Hiding Games. In Narrative Hiding Games, a character searches for something in a series of probable places (e.g., the Cookie Monster looks for a Cookie in an oven, a cookie jar, a lunch box, and a cupboard). The speaker puts on a handpuppet showing the character. The speaker closes his eyes, and the listener hides the object under one of a series of plastic cups on which are fastened pictures of the hiding places. The speaker opens his eyes and makes the puppet guess where the object is hidden.

Both Hiding Game formats may be used in creating games that vary in the demands they place upon players. A very easy game uses only two pictures (e.g., pictures of two people). In that case, the speaker need only produce the name of one person. In contrast, rather complicated games are created if the pictures show different agents performing various actions with various objects.

Communicative Lotto

This format presupposes picture recognition and picture matching skills.

The speaker in communicative Lotto is given a set of pictures; the pictures are arranged in a deck, and the deck is placed face down in front of the speaker.

Each listener has one large master card showing some of the speaker's pictures. The speaker draws one picture from the deck and describes it to the listeners. The speaker does not show the picture to the listeners.

The listener whose master card shows the picture described by the speaker claims the picture. The speaker shows the picture to the listener, and the players check to make sure that the speaker's picture matches the picture indicated by the listener. If the pictures match, the listener uses the speaker's picture to cover the matching picture on the master card. If not, the picture is returned to the bottom of the speaker's deck.

The speaker continues to describe and the listeners continue to claim the pictures. If the game is played competitively, the winner is the first listener to cover all the pictures on his or her master card with matching pictures. In the noncompetitive version, the object of the game is to have all the listeners (or a single listener) cover all of the pictures on the master cards (or card) with matching pictures.

In the next round, the speaker becomes a listener. The new speaker may be the winner of the first round, or the players may take turns as speaker.

Communicative Lotto games are often made from photographs. These photographs show people and objects familiar to the children, including the children themselves. A game can be created in such a way that complex descriptions are required to differentiate among the pictures. For instance, photographs can be taken of two children doing the same things (e.g., Billy drinking from a water fountain, climbing stairs, using finger paints, and Johnny performing the same activities). In this case, communication is successful only when players provide descriptions of who is doing what.

Action-Directive Games

In these games, one player directs another to perform various actions. In Action-Directive games played with photographs, the speaker uses photographs of the listener to direct the listener. If the speaker's photograph shows the other player sitting, for example, the speaker directs the listener to sit, and the players use the photograph to verify the adequacy of the communication.

In Action-Directive games played without photographs, the players duplicate one another's actions. The players are located so that they cannot see but can hear one another (e.g., separated by a divider). The speaker does something, (e.g., jumps up and down) and tells the listener to do the same thing. The players then check to see whether they have succeeded in duplicating each other's actions or positions (e.g., the teacher removes the divider).

Games in this format are suitable for children who recognize the match or mismatch between the photograph or the speaker's model action and the listener's action.

Picture-Toy Matching Games

Games played in this format are suitable for children who can match toys with photographs of those toys; some developmentally delayed children have difficulty doing so.

A set of toys is arrayed in front of the listener. A set of photographs of these toys is placed face down near the speaker. The speaker draws the first photograph. Without showing the photograph to the listener, the speaker describes it. The listener arranges the toys as the speaker directs.

When the players are satisfied that the arrangement of toys duplicates the arrangement shown in the photograph, the speaker shows the photograph to the listener. The players compare the arrangement of the toys with that shown in the photograph. The adult player or bystander comments on correspondences and differences.

The players then reverse roles.

A complex game in this format focuses on agent-action-object constructions and uses two different toy animals and two different toy vehicles. The photographs for the game show each animal performing a different action in relation to each vehicle, (e.g., a toy cat is pushing a fire truck, riding in the fire truck, pushing a wagon, riding in the wagon; a toy horse is shown similarly.). The speaker holds the photographs while the listener arranges the toys. The speaker selects one photograph and describes it so that the listener can arrange the toys to match the photograph (e.g., "The horse is pushing the wagon."). When the listener has arranged the toys, the speaker displays the photograph, and the players compare the photograph and the toys.

This is a relatively advanced game. To communicate about the toys, the speaker must specify which agent, action, and object are shown in a photograph. Similar, but easier, Picture-Toy Matching games require the listener to specify only the agent, the action, or the object, or a two-term description of agent-action, action-object, and so forth (e.g., "The horse is pushing" or "Cat, firetruck."). Other versions of this game involve very different content. For instance, colors can be taught if the toys are objects of different colors and the pictures are high-quality color photographs. In such a game, the listener must simply name the color of the object described.

A particularly engaging series of games using this basic format involves a toy village or map with stationary landmarks (e.g., bridges, a house, towers), a road, and vehicles. The vehicles are photographed in various places in the "village," and the speaker uses these photographs to direct the listener in the placement of the vehicles.

Identical Arrangement Games

This format is adapted from a technique widely used in studies of the development of communicative competence. It is appropriate for children who can recognize a match or mismatch between arrangements of sets of toys.

In these games, one set of toys is placed in front of the speaker, and an identical set is placed in front of the listener. A screen (e.g., a manila folder) separating the two players blocks each player's view of the other's toys.

One player, the speaker, arranges his or her toys. He or she then describes the arrangement so that the listener can duplicate it. The screen is removed, and the players examine the match or mismatch between the two arrangements. The teacher may be a player (speaker or listener) or may be a bystander who facilitates the communication between the players.

The Guessing Game Format

This format is particularly appropriate for eliciting utterances in a questioning mode. One guessing game involves two listeners and a speaker. While the speaker's eyes are closed, each listener performs one of a number of specified actions in one of two places (e.g., jumping or sitting on the floor or a mat). The speaker must guess which listener is doing what in which place (e.g., "Jane jump floor?" or "Is Justin sitting on the mat?"). Notice that in this particular game only three words are absolutely necessary for adequate communication. Fully formed sentences are never arbitrarily demanded of children, but other players (teachers or more advanced peers) model the fully formed sentences when they are speakers.

In a simpler, two-word game, there is only one listener, one action or one object. In this two-word version, only the action and object, agent and object, or agent and action must be specified, not the full agent-action-object sequence (e.g., "Sit mat?" or "Justin mat." or "Justin sit," but not "Justin sit mat?").

APPENDIX B

LETTERS, EXPLANATIONS, PARENTAL PERMISSION FORMS

April 1, 1980

Dear Parents,

The Research Institute for Educational Problems has invited us to participate in an educational study project. The bulk of this project will take place during the 1980-81 school year. During this spring members of the staff will be doing some preliminary data collection in our classroom. This will involve taping and recording the children's language.

Susan Conant from the staff of the institute is developing a curriculum for use with language delayed children. It is an exciting project and will be extremely beneficial to your children and our class.

Please read the enclosed letter form Susan Conant and return the permission slip promptly. Any questions or concerns can be directed to our staff at the Coolidge School. We highly recommend your consideration of this proposal.

Sincerely,

Kathleen Kelley Lockyer

Anne Hardiman, Speech Therapist

RESEARCH INSTITUTE FOR EDUCATIONAL PROBLEMS, INC.
29 WARE STREET • CAMBRIDGE, MASSACHUSETTS 02138 • TELEPHONE (617) 868-0360-2

Dear Parents,

The Research Institute for Educational Problems is developing a new language training program. In order to evaluate this program, we need to compare the speech of children in our program with the speech of children in other programs. Your child's teachers have generously offered to make tape recordings of the children in their program.

In order to use these tape recordings, we need your permission. The tape recordings will be of the children and teachers in ordinary play situations. Each tape will be of about 10 or 15 minutes of play. The tape recording will be done two or three times during the year. The tape recordings will be kept confidential. In our records, any identifying information, including the children's names, will be changed.

If you are willing to have the tape recordings of your child used in this project, please sign the form below and return it to your child's school. Thank you for your help.

Sincerely,

Susan Conant, Ed.D.

I give permission for tape recordings of my child, ________________, to be used as described in the above letter.

________________ Date

________________ Parent or Guardian

BEST COPY AVAILABLE

RESEARCH INSTITUTE FOR EDUCATIONAL PROBLEMS, INC.
29 WARE STREET • CAMBRIDGE, MASSACHUSETTS 02138 • TELEPHONE (617) 868-0360-2

Dear Parents,

I would like your permission to make tape recordings in your child's classroom. These tape recordings will help me to observe the children's language development. They will also help in planning new language development activities for use in the class. Eventually, I will use the activities developed in your child's class and in other classes to write a language development curriculum.

Your child's teachers and I will listen to the tapes ourselves and will have portions of the tapes transcribed at the Research Institute for Educational Problems. In our records and in anything wil may write about our work with the children, the children will be identified only by numbers or by fictitious names. Anything that might identify particular children will be changed.

I would appreciate your written permission for you child to be tape recorded. Please sign the form below and return it to your child's class.

Sincerely yours,

Susan Conant, Ed.D.
Research Associate

PERMISSION SLIP Date ____________________

I give permission for my child, ____________________________

to be tape recorded, as described in the letter above.

____
Parent or Guardian

BEST COPY AVAILABLE

APPENDIX C

DATA COLLECTION FORMS (BACKGROUND DATA)

Confidential

Background Information

Name______________________________Identification number____________

School____________________________________

Birthdate________________________________

Sex_____________

When did this child start at this school?

Is this the first time the child has attended school?

To what languages is the child exposed?

What language(s) is (are) spoken in the child's home?

Does the child produce any words in a language other than English? If so, what language, what words? Describe briefly.

With whom does the child live? Are there relatives, others in the home?

Ages of brother and sisters.

Parental occupation.

Briefly describe any unusual characteristics of the family (e.g., Is this a poor, multi-problem family? A very odd family? Is either parent very limited? Is the home notably enriched? Does the child receive exceptional amounts of attention and affection?).

Does the child receive speech therapy? If so, describe briefly.

Does the child receive any other special needs services? If so, list.

Describe briefly the child's special needs, diagnosis, information about etiology and medical condition.

Is the child's hearing normal? Describe any questions or history relevant to hearing.

Does the child have articulation difficulties? How hard is it to understand what s/he says?

Does the child ever babble?

Is the child chronically silent in the classroom?

Does the child speak loudly enough?

Does the child rely heavily on pointing, tugging, and otherwise gesturing as a means of communication? Describe.

Is there anything inappropriate about the child's use of language? (e.g., echolalic, perseverative, contains odd content, disordered syntax)

Does the child have gross motor, gait, or other orthopedic problems? Describe briefly.

Is the child shy, quiet, withdrawn?

Is the child loud, noisy, assertive?

Does the child hit, pinch, bite, or otherwise physically injure others?

Is this an isolated child? Does s/he usually sit alone, not play with other children?

Optional: What is the child's ethnic/racial background?

Additional information and comments:

APPENDIX D

CODEBOOK

CODE BOOK

Card 1

Var. Name	Column	Description
ID	1-3	Identification number
CD	4-5	Card Number=01
SCH	6-7	School child attended 01= 02= 03= 04= 05= 06= 07=
AGE	9-10	Age in months at first observation
SEX	11	Sex 1=male 2=female
PRES	12	Had the child just started school for the first time 1=no 2=yes 9=unknown
LANGEX	13	Child is exposed to what languages? 1=English only 2=Spanish and English 3=English and one other, not Spanish 4=English and two or more others
LANGH	14	What language is spoken in the child's home? 1=English only 2=other only 3=bilingual, multi-lingual
SLANG	15	Does the child produce any words in a language other than English? 1=no 2=yes
RES	16	Residence. Does the child live with 1=both parents 2=mother alone 3=mother & other(s) [adults--not siblings] 4=foster home 5=other

SIB	17	Siblings? 1=none 2=yes, older only [code twin as older] 3=yes, younger only 4=yes, younger and older 9=unknown
TWIN	18	Is the child a twin? 1=no 2=yes 3=twin deceased
SES	20	Parental occupation, SES 1=disabled, chronically unemployed 2=working-class occupation 3=middle-class, white collar 4=professional
DO	21	Is this a down and out family? Multi-problem family associated with poverty? 1=no 2=yes
VOF	22	Is this a very odd or bizarre family? 1=no 2=yes
PARMR	23	Does either parent (or both) seem to be mentally retarded? Or very limited? 1=no 2=yes 9=unknown
HENV	24	Is the child's home environment now 1=notably neglectful/deprived/abusive? 2=neither notably deprived nor enriched? 3=notably enriched/attentive?
SPRX	25	Speech therapy. Does the child receive speech therapy from a registered speech therapist? 1=no 2=yes, mainly articulation 3=yes, conversational 4=yes, unknown
SPNEED	26	Does the child receive any special needs services (besides language training or speech therapy)? 1=no 2=yes

DIAG1	27-28	Diagnosis - first	Use "Diagnosis codes" below.
DIAG2	29-30	Diagnosis - second	
DIAG3	31-32	Diagnosis - third	
DIAG4	33-34	Diagnosis - fourth	

Diagnosis Codes

00=none, no others
10=Down's trisomy 3 or type unknown
11=Down's, mosaic
12=Spina Bifida
13=Cornelia de Lange syndrome
15=fetal alcohol syndrome
16=autism, "autistic-like"
17=autistic features
18=seizure disorder known
19=major CNS involvement suspected (not MBD)
20=CNS involvement other than seizures, known (not c.p.; e.g., hydrocephaly, encephalocele)
21=profound neglect in infancy, known
22=sexual abuse
23=physical abuse and/or neglect
24=chronic illness, mild (e.g., allergies)
25=chronic illness, serious (e.g., serious heart problem, asthma, something requiring hospitalization)
26=aphasia, disordered language
27=c.p.
28=obvious emotional disturbance not coded elsewhere
29=serious disorder evident but records nonexistent, unavailable, or incomplete. (The child seems to "have something.")
30=minor neurological damage suspected
31=mother 16 or younger when child was born

COGN 35 Cognitive functioning in areas other than language. Code the child's current level of functioning not what you think his/her potential is. Code how well the child now performs, not how well s/he might perform in happier home and school conditions.

1. No intellectual retardation. This is an intellectually normal child. In a regular class, this child would do just as well as non-handicapped peers except in the area of language.

2. Mild delay. This child is slower than non-handicapped peers. While not a retarded child, the child seems understimulated or "culturally deprived," or shows a delay that will probably not be evident when the child is older. These children can be expected to enter regular first grades.

OR This child does not perform as well as non-handicapped peers on many cognitive tasks. The child shows a mild to moderate delay. The child does not have a genetic syndrome of mental retardation, but his/her performance is below normal.

3. Serious delay. This child may have a genetic syndrome of mental retardation, autism, or autistic-like features. The child's intellectual functioning is moderately-severely retarded. Thi child seems to "have something," whether or not w know what it is.

HEAR 36 Hearing is:

1=known normal, no history or suspicion of loss
2=history of loss, now normal
3=history of loss, now question of mild loss
4=reported mild loss, not evident to teachers
5=question of loss, no other information.

ORAL 37 Is there a known or suspected anatomical problem that might interfere with the child's speech production?

1=no
2=cleft palate
3=known brain injury
4=dentition and/or palate
5=other

ARTIC	38	Are notable articulation difficulties evident? 1=no, mild, no trouble understanding him/her 2=sometimes, somewhat 3=yes, often impossible to understand
BAB	39	Does the child babble? 1=never, hardly ever 2=yes, sometimes, often
SIL	40	Is this child chronically silent? 1=no, talks as much as others 2=says little 3=yes, never or hardly ever talks
VOL	41	Volume. Does the child speak too softly to be understood? 1=no 2=sometimes, occasionally 3=yes, often
POINT	42	Does the child rely heavily on pointing and tugging (etc.) to communicate? 1=no 2=yes
INAPP	43	Are there any inappropriate qualities to the child's talk? 1=no 2=echolalia 3=odd content, perseveration 4=both 2 & 3 5=disordered syntax, word retrieval 6=other
ORTH	44	Physical problems. Does the child have gross motor, gait, or other orthopedic, physical problems? 1=no,very mild 2=yes,fairly mild(mild hypotonia, clumsy) 3=yes,handicapping(c.p., wears leg braces)
SHY	45	Is this child shy, quiet, withdrawn? 1=no 2=somewhat, sometimes 3=yes
LOUD	46	Is this child loud, noisy, assertive? 1=no 2=somewhat, sometimes 3=yes
HURT	47	Does this child pinch, hit, bite, or otherwise physically injure others? 1=no 2=yes

ISOL 48 Is this an isolated child? Does s/he usually sit alone, not play with other children?
1=no
2=yes (sometimes, often, always)

RAC 49 ethnicity
1=Caucasian
2=Black
3=Asian
4=Other, combination of 2 & 3

CODE BOOK

All Even-Numbered Cards (02, 04, 06, etc.)

Column	Var. Name	Variable Description
1-3	ID	Subject identification number
4-5	CD	Card Number
6-8	OCC	Occasion (See "Occasion Codes")
9	DAT	Content of data on this card 1 = amount of speech 9 = no observation
10	LT	Language Training, if any, in past 4 months 1 = no training, child in school 2 = observation follows summer break 3 = by RIEP staff, outside classroom 4 = by RIEP staff, in classroom 5 = non-RIEP people, in classroom 6 = non-RIEP people, outside classroom
11	TR	Language training took place in what context: 1 = individual one-to-one 2 = with a peer 3 = 2 + 3 4 = group 5 = other 9 = not applicable
12	TEAF	Teacher-trainer background: First trainer
13	TEAS	Teacher-trainer background: Second trainer 1 = RIEP staff 2 = teacher with post BA degree, special needs certification, other credential 3 = teacher aide without advanced credential, paraprofessional, other 4 = speech therapist 9 = not applicable
14	(columns blank)	
15-17	IT	Number of totally intelligible turns
18-20	PT	Number of partly intelligible turns

All Even-Numbered Cards (02, 04, 06, etc.)

Column	Var. Name	Variable Description
21-23	UT	Number of unintelligible turns
24-26	OT	Number of "other" turns
27-29	TT	Total number of turns
30-32	IWP	Number of intelligible words in partly intelligible turns
33-35	PWP	Number of partially intelligible words in partly intelligible turns
36-38	WIT	Number of words in totally intelligible turns
39-41	WT	Total number of words
42-44	ONE	Number of totally intelligible one-word turns
45-47	TWO	Number of totally intelligible two-word turns
48-50	THR	Number of totally intelligible three-word turns
51-53	BIG	Number of totally intelligble turns longer than three words
54-55	YNT	Number of intelligible yes-no turns
56-57	LIT	Number of words in longest totally intelligible turns
58-60	MFIV	Mean length of the five longest totally intelligible turns
61-62	RET	Number of repeated turns
63-65	MLIT	Mean length of intelligible turns*
66-68	MYN	Mean length of intelligible turns without yes-no turns*
69-70	MLU	Mean length of utterance in morphemes*

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* Implied decimal

All Odd-Numbered Cards (except 01)
(03, 05, 07, etc.)

Column	Var. Name	Variable Description
1-3	ID	Subject identification number
4-5	CD	Card Number
6-8	OCC	Occasion (See "Occasion Codes")
9	DAT	Content of data on this card 2 = syntax and pragmatics 9 = no observation
10	LT	Language Training, if any, in past 4 months 1 = no training, child in school 2 = observation follows summer break 3 = by RIEP staff, outside classroom 4 = by RIEP staff, in classroom 5 = non-RIEP people, in classroom 6 = non-RIEP people, outside classroom
11	TR	Language training took place in what context: 1 = individual one-to-one 2 = with a peer 3 = 2 + 3 4 = group 5 = other 9 = not applicable
12	TEAF	Teacher-trainer background: First trainer
13	TEAS	Teacher-trainer background: Second trainer 1 = RIEP staff 2 = teacher with post BA degree, special needs certification, other credential 3 = teacher aide without advanced credential, paraprofessional, other 4 = speech therapist 9 = not applicable
14	(columns blank)	
15	NOU	Number of noun categories used (0-9)

All Odd-Numbered Cards (except 01)

Column	Var. Name	Variable Description
16	YES	Does child use any "yes" word? 1 = yes
17	NO	Does child use any "no" word? 1 = yes
18-19	ATCO	Number of different attribute and color words used
20	EXP	Does the child use an expressive or attentional word? 1 = yes
21-22	ACT	Number of different action verbs
23-24	AUSE	Number of different uses of action verbs
25-26	STA	Number of different status verbs
27-28	SUSE	Number of different uses of status verbs
29-30	QUA	Number of different quantifiers, including numerals, used
31-32	PROF	Number of different proforms, other than pronouns, used
33-34	PRON	Number of different pronouns used
35	REC	Number of different recurrence terms
36	NON	Number of different nonexistence terms
37-38	MOD	Number of different modulation categories used
39-40	TEM	Number of different temporals used
41-42	LOC	Number of different locatives used
43	NEG	Does the child use negation? 1 = yes
44	INT	Does the child mark any interrogatives as such? 1 = yes
45	(columns blank)	

All Odd-Numbered Cards (except 01)

Column	Var. Name	Variable Description
46-47	TEN	Number of tense + utterances not in EIM, SPIM, PROMPT, or INAPP categories
48-49	NAM	Number of OTHER, NAME utterances
50-51	ATTR	Number of OTHER, ATTRIBUTE utterances
52-53	CMNT	Number of OTHER, COMMENT utterances
54-55	RQP	Number of REQUEST PRESENT, OTHER utterances
56-57	RQA	Number of REQUEST ABSENT, OTHER utterances
58-59	RQI	Number of REQUEST INFORMATION, OTHER utterances
60-61	NEX	Number of NONEXISTENCE, OTHER utterances
62-63	RJ	Number of REJECT, OTHER utterances
64-65	DN	Number of DENIAL, OTHER utterances
66-67	AFF	Number of AFFIRM, OTHER utterances
68-69	ETC	Number of OTHER utterances in ATTENTION, GREET, ROUTINE, EXCL, UN, and DEMO categories
70-71	INA	Number of INAPPROPRIATE utterances
72-73	EIM	Number of EIM utterances (elicited imitation)
74-75	SPIM	Number of SPIM utterances (spontaneous imitation)

APPENDIX E

DATA COLLECTION DIRECTIONS

Language Project

Directions for Collecting Spontaneous Speech Samples

Spontaneous speech samples are tape recordings of children's talk in a situation where they are free to converse. In other words, to collect a sample, try to encourage the child to talk, but do not give teaching or testing tasks. Provide yourself with an array of interesting toys. Try to elicit from the child the best conversation of which he or she is capable. Cover any topics that interest the child: the toys you are using, pets, food, clothing, the child's family, favorite television shows, or something else. Try a variety of ways to elicit speech. Ask questions. Ask different kinds of questions. Make comments. If a child begins to relate an anecdote, encourage him or her to continue it. Ask for details.

When a child talks very little, it is tempting to fall into a pattern of asking the child to name one object after another. If you become aware that you are doing this, try to find another way to encourage the child to talk.

Sometimes unexpected events and interruptions occur when you are trying to tape a child. A phone rings, someone walks in, something else happens. Deal with these interruptions in a brief but normal manner, and continue to talk with the child.

When you tape the samples, please avoid using a tape recorder with rechargeable batteries. (Battery packs and ordinary batteries are fine.) We need 10 minutes of conversation beginning with the child's first utterance. To be on the safe side, try to record a little bit more than this. (The 10 minutes does not include any time you spend dealing with a phone call or other interruptions.)

If events occur during the conversation that would help us to understand it, please let us know. If the sample seems to be highly unrepresentative of the way the child usually talks, let us know.

Please write clearly on the cassette itself the child's first name, the date, and the name of the school, and mark the cassette "SSS."

APPENDIX F

CODING MANUAL AND SUMMARY FORMS

Transcribing and Coding Manual
RIEP Language Training Project

Susan Conant and Barbara Hecht

The coding for the Language Training Project is intended to provide a large amount of detailed information about samples of spontaneous speech. The coding involves recording information about the amount of speech a child produces, the vocabulary and syntax he or she uses, and the pragmatic functions of his or her language. In coding a sample of speech, each of these three aspects of the child's language is coded separately.

Transcription

Begin a transcript with the child's first conversational turn, the first thing the child says, whether or not it is intelligible. Unless otherwise directed, stop transcribing exactly 10 minutes later in the sample.

Locate the child's speech in the left-hand column of the paper, the adult's speech (if any) in the right. If two children are present, make two columns on the left for the children's speech. Utterances that occur later in time are placed lower on the paper:

Amy	Teacher
What that?	
	A cat. It's a cat.
Cat.	

Here, Amy spoke first, then the teacher, then Amy.

Totally unintelligible portions of speech are marked: (unint.). Partially intelligible, unclear, and other questionable interpretations are placed in parentheses. If you think that the child probably said the word cat, write: (cat). One conversational turn may contain intelligible, unintelligible, and partially intelligible segments:

Amy: (unint.) (cat), no not a (cat)

Note that adults as well as children are sometimes unintelligible.

Punctuate in a way that reflects intonation, so far as possible. Sentences spoken with a questioning intonation should end with question marks. Transcribe "uh-huh," "um," and so on. If the child makes noises, write: (noises). If the child makes a conventional sound for something (e.g., "whee" for a car), write down the sound as best you can.

If the child or adult uses identifying information, such as names of towns, siblings, etc., please change these when you transcribe.

A conversational turn begins when someone starts to talk. It ends when someone else begins to talk or when the speaker pauses for 10 seconds or more. If such a pause occurs, mark the transcript as follows:

Amy

A big car (10 sec)/
Another one (17 sec)/
Another one.

Mark with a circled R any turns of the child's that are exact repetitions of portions of another's immediately preceding turn.

Amy	**Teacher**
	Why is he doing that?
Why he do dat? R	
	He likes it.
Like it. R	
	And Barbara does, too.
Barbara, too. R	

If the meaning of a child's vocalization is clear to you from context, from knowledge of the child, or whatever, but the transcribed sound is not meaningful, place your interpretation in brackets, with an = sign.

Amy

Ka, ka [= Keith]

Sometimes the adult may leave for a minute or two. Sometimes visitors will appear and converse with the adult. If these kinds of major interruptions occur, time them, then continue transcribing for that time at the end of the 10-minute period. In other words, transcribe for 10 minutes in which the child had a chance to speak. If visitors talk with the child briefly, other children wander in briefly, and so on, just keep transcribing as usual, allotting another column to the visitors, or placing their speech in parentheses, labelled, under the column containing the adult speech.

Coding

Section 1. Amounts of Speech

This section of the coding is generally performed first. Begin the process of coding by numbering the conversational turns. Having numbered the turns, return to the first turn. (Be sure to number separately cases in which the child takes a turn, pauses for 10 or more seconds, then speaks again. These are shown on the transcript.)

Classify the first turn as intelligible (I), unintelligible (U), partially intelligible (P), or other (O), using the definitions shown in Figure 1. If the turn contains any intelligible words, write on the transcript next to the turn the number of intelligible words (e.g., I=3). If the turn is a partially intelligible one (P), write down the number of partially intelligible words and, separately, the number of intelligible words in that turn. For example:

Kitty bye-bye. . . . .I, I=2

Kitty (go) bye-bye. . . . .P, P=1, I=2

Unintelligible turns, by definition, contain no words.

Routines and recitations are recorded under the general category "Other." These include the singing of a song, recitation of a poem, and other such stereotyped parroting of verse or prose. Do count the number of words in these, but be careful later in recording the numbers of words not to include this count under the usual headings.

Figure A-1

Turns

I: Totally intelligible turns are just that - all words are transcribed as intelligible, with no words in parentheses, no words unintelligible. Intelligible words do not appear in ()'s in the transcript.

P: Partially intelligible turns contain at least one unintelligible portion, or at least one word in parentheses.

U: Totally unintelligible turns contain no intelligible words and no words in parentheses. These turns are completely uninterpretable.

O: Other turns are sighs, grunts, laughter, and other vocal but nonverbal turns, plus singing routines, routinized chants, and such.

Words are dictionary entries, with a couple of exceptions and qualifications. Names like Big Bird, Cookie Monster, and such are one word. (Big Bird is one word.) A few familiar compounds are also one word: ice cream, jungle gym, Sesame Street. Common child language abbreviations of some of these are also one word: "Sesame" and "Cookie" are common childhood nicknames and count as one word each. Words like kitty cat, choo-choo train and such are one word each. The words gonna and wanna seem to function as one word each, and they are so counted.

Exclamations like wow, ouch, and oh count as words. Sighs, laughter, and other noises are not words. Exclamations are sometimes difficult to classify as words or not words. Ah is a word if it seems to be used as an equivalent to ah-hah! or oh! but not if it is simply a sound made in sighing. If it's a repetition of another's ah, it is definitely a word. If it is a hesitation sound equivalent to um or er, it is not a word.

Common lexicalizations of sounds are words. For example, stereotyped versions of animal sounds are words; the noise of a lion roaring, a fire truck siren, and such are words. Nonstereotyped sounds are not words.

Two-word combinations contain words that can and are used alone or in combination with other words: orange juice, dump truck, garbage truck, fire engine, ice cream man, and Mrs. Smith are two words each.

False starts at words, stuttering, and so forth do not count as words. Genuine repetitions (e.g., "Cat, cat, kitty cat") do count. Hesitation sounds like "um" and "er" do not count as words.

Proceed to mark each turn on the transcript according to type of turn and number of intelligible and partially intelligible words. You are now ready to begin to fill in the summary form. The "Turns" section of this form records the number of turns occuring in each category. Obviously, you need to check your work by making sure that the numbers add up to the same total shown on the transcript.

Words are summarized in three ways: the number of intelligible words occuring in partially intelligible turns, the number of partially intelligible words (words in parentheses) in partially intelligible turns, and the number of words in totally intelligible turns. The "total words" number is the sum of the above three. If words occur in singing routines, recitations, and such, which are "other" turns, indicate the number of words in these routines on the summary form, but do not include them in the total.

Next, show the distribution of one-word, two-word, three-word, and longer turns. You will need a piece of scratch paper to calculate this.

Next, go through the transcript and count the number of intelligible turns consisting solely of the words yes, yeah, no, nope, and such. Record this as "Intelligible turns 'yes' or 'no.'"

Locate the five longest totally intelligible turns in the transcript. Sum the number of words in these five turns, then divide by 5. This is the mean length of the 5 longest totally intelligible turns.

Go through the transcript and count the number of turns marked "R" for repetition. This is the number of repeated turns.

The mean length of intelligible turns is given by dividing the number of words in totally intelligible turns by the number of totally intelligible turns. To find the mean length of intelligible turns without "yes-no" turns, subtract the number of yes-no turns from the number of words in intelligible turns. Then subtract the number of yes-no turns from the number of intelligible turns. Finally, divide the first quantity by the second.

MLU

MLU, mean length of utterance in morphemes, is calculated as follows:

1. Follow Brown's (1973) criteria for defining a "morpheme." (See below.)
2. Start at the beginning of the transcript and count the first 50 intelligible utterances. Omit singing, recitation of the alphabet, animal noises, etc. (The only exception to "beginning at the beginning" is when there is some indication, marked on the transcript, that there was an initial warm-up period.)
3. Mark the end of each utterance with a /.
4. Indicate the number of morphemes in an utterance like this: 4/
5. The only time you may count utterances that are partially unintelligible is when you are *absolutely* sure that the unintelligible portion is a single morpheme. For example, if the child says "(n) the house" you may not know whether the word is *on* or *in*, but you are virtually sure it is one of the two. In that case you may count the utterance. DO NOT count an utterance like this: "bird sing(ing)," since you can't be sure whether the child included the progressive inflection or not. The rule of thumb is:

WHEN IN DOUBT, LEAVE IT OUT (of the utterance count)! If you feel that the MLU count is artificially deflated by leaving out all of the partially intelligible utterances, indicate that fact on the score sheet.

6. Do not count fillers like "uh," "mm," or exclamations like the sound made when you are surprised. If "mm" is used as an affirmative reply to a question, it counts as a morpheme ("mm hmm" counts as one morpheme also).

7. As in Brown's system, stuttering or false starts when pronouncing a word are not counted -- e.g. "m-m my ball" counts as 2 morphemes.

8. What is an utterance?

A conversational turn contains more than one utterance if:

- the child pauses long enough to take a short breath (the child need not actually take a breath)
- in the midst of the turn there is a sentence-final intonation contour (either rising or falling)
- in answers to yes-no questions (e.g. yeah, it rain) where the "yes" or "no" would be separated from the rest with a comma, you must listen to the tape. If there is a falling contour after the "yeah" and/or a pause, count the "yeah" as a separate utterance. PLEASE INDICATE HOW MANY OF THESE DIFFICULT DECISIONS YOU HAD TO MAKE ON THE SCORE SHEET.

9. Sometimes a conversational turn is partially unintelligible, but within the turn there is a fully intelligible utterance. For example:

yeah (   ) /   little baby /

Even though the verbalizations after "yeah" and before "little" are unintelligible, there is a definite falling contour and pause at the end of the unintelligible portion. "Little baby" is included in the utterance count. In the turn:

uh, (you want uh) cat / you want cat? 3/

there was a falling contour and slight pause after the first use of cat, so the fully intelligible portion that followed cat was counted as a three-morpheme utterance.

10. I have found it most helpful to indicate utterance boundaries and morpheme counts while listening to the tape. I can generally do this by listening to the tape straight through, pausing to rewind only in ambiguous cases or to listen for pauses.

11. When calculating MLU, mark in pencil each of the 50 utterances to be included. Then go through the transcript and add up the morphemes (with a calculator, if possible) and divide by 50. After calculating MLU, DO IT AGAIN! It's easy to make mistakes, so do the division twice to make sure you are correct.

Brown's (1973) criteria for a morpheme:

"All compound words (two or more free morphemes), proper names, and ritualized reduplications count as single words. Examples: "birthday," "rackety-boom," "choo-choo," "quack-quack," "night-night," "pocketbook," "see-saw." Justification is that no evidence that the constituent morphemes function as such for these children. . .

Count as one morpheme all irregular pasts of the verb (got, did, went, saw). Justification is that there is no evidence that the chld relates these to present forms. . .

Count as one morpheme all diminutives ("doggie," "mommie") because these children at least do not seem to use the suffix productively. Diminutives are the standard forms used by the child. . .

Count as separate morphemes all auxiliaries (is, have, will, can, must, would). Also all catenatives: gonna, wanna, hafta. These latter counted as single morphemes rather than as "going to" or "want to" because evidence is that they function so for the children. Count as separate morphemes all inflections, for example, possessive [s], plural [s], third person singular [s], regular past [d], progressive [in]." (Brown, 1973)

Section 2. Syntax and Semantics

This section is a checklist of the occurrence of certain classes of words and constructions. In most parts of this section, you will simply check off the occurrence of a specified word. For example, check off the appropriate word if a child says, yeah, all gone, under, and so forth. The words listed are common ones in child language. If others occur, list them under the appropriate heading. For instance, the attributive yucky is not listed under Attributes, but it should be listed and checked off if it occurs.

Under the sections "Action Verbs" and "Status Verbs", you will need to count the number of times each occurs as well. For instance, if the chld uses the action verb kick four times, list the word kick under "Action Verbs," and indicate that it occurred four times. A few uncommonly occurring categories on page 2 of the form should have lists as well, but this presents little trouble since the children we work with seldom use these kinds of words. Specifically, list any modal verbs, relative pronouns, and question words that occur.

Special note on scoring echolalic speech. If the child whose transcript you are scoring uses echolalic speech, use 2 of these forms, recording the echolalic speech on one, the remaining speech on the other.

Nouns

Generic nouns for people: man, lady, cowboy, hockey player, boy, girl, policeman, dancer, teacher

Proper names: Mrs. Smith, Billy, names of pets, Mommy. Do not include names listed under "TV, story characters."

Animals: dog, kitty, cat, horse, etc.

Food: ice cream, mild, crackers. Do not include: snack, lunch, dinner.

Clothing: jacket, shoes, hat, mittens, etc.

Body parts: feet, hands, eyes, etc.

TV, story characters: all Sesame Street characters (e.g. Big Bird, Grover, Kermit) plus Snoopy, Woodstock, Spiderman, King Kong, etc.

Vehicle: car, truck, bike, etc.

Other: all others

Yes, No: Words are marked here if they are used to mean "yes" or "no" and are used conventionally. Include "un-un," "um-hm," "yeah," "yup," and such, plus "ok" and "right" when used to mean "yes." Do not include uses of "right" to mean correct. Test: if you can substitute "yes" or "no" without altering meaning, count it.

Attributes: List any attribute words that occur, e.g. "big," "little," "pretty," "ugly."

Color: Count whether or not the label is correct. List each one used.

Number: A "counting routine" is a rote recitation of "1,2,3,4,5..." or "14, 18, 20." The production of numbers in a meaningful way is noted separately (e.g., "two kitties," "four stars," "one big one"). Note that the number is counted even if used incorrectly (e.g. even if thee child says "three" and there are really two).

Expressives: These are conventional exclamations and expressive sounds. "Oh," "oh-oh," "whoops," "gee," and such are counted, but not sighs, groans, and other noises. If you can think of the expressive as a word, even loosely, mark it. Do not count "um" and "er."

Verb: Status verbs are easy to identify in the following way: In most dialects of English, these verbs are not used in the present progressive. We don't say, "I am knowing," "I am needing," "I am having a red car" (to mean "I own"), "I am liking this."

Naturally, a few verbs are tricky. In particular, have may simply be an auxiliary verb instead of a main verb (e.g., "I have been. . ." "I had thought that. . ."), in which case mark it as such. Have may also be used to refer to actions rather than to states (e.g., "I am having a sandwich for lunch."). Similarly, the verb to be may be an auxiliary verb: "He is singing" shows to be as an auxiliary, while "He is tall" shows it as a main verb, but a status one. (We don't say, "He is being tall.") Count the number of times each status verb is used. List the action verbs used, and count the number of times each is used.

Quantifiers: Any, all some, lots of, and other similar words.

Forms used to express recurrence: More, another, again, and too, as in "me, too." (Not as in "too big.") The word other is noted here, although it expresses contrastiveness rather than simple recurrence.

Nonexistence: These are words used to mean that there isn't any of something, or isn't any anymore: "No" as in "no cookies," "all gone," "no more," and certain uses of "away" and "bye-bye." Do not count words like "bye-bye" if used simply to bid farewell.

Proforms: Forms that stand for something else: "This" can be used to stand for "the cookie," "the blue car," or for practically anything else. Count proforms here if used alone: "This is mine," "this one is. . ." but not "this cookie," etc. (see "Demonstrative" articles).

Regular plurals are formed by adding -s, as in "cats."

Irregular plurals aren't: "children."

Articles: "A" and "an" are indefinite. "The" is definite.

Demonstrative articles are words like "this," "that," "these." Mark these when used as in "this cookie," "that car."

Pronouns: Mark those listed.

Comparatives: bigger, biggest, taller, littlest, etc.

Reflexives: Children sometimes use "self" without joining it to another form (e.g., "I do it self."). Other reflexives are: myself, himself, themselves, etc.

Present progressives: For our purposes, these are verb forms ending in -ing, whether or not they are proper present progressives (e.g., singing, riding, laughing).

Past regular: Formed by adding -ed. "He laughed." Mark here even if adults form the past of the verb in an irregular way (e.g., mark here if the child says, "he runned," "she singed.")

Past irregular is not formed by adding -ed. For instance, "he ran," "she sang."

Auxiliary "have" and "be": Mark here if these verbs are used as auxiliaries with main verbs: "I have been. . .," "I am singing."

Negation is marked if a sentence or fragment involves negating a proposition. "It isn't fair," "not a car," etc. (No and not alone don't count here.)

Third person -s is used in "he sits," "she runs," etc.

Future will is used to refer to the future: "It will rain," "I will do it" obviously can be used to insist, or to complain, or to do lots of other things besides to refer to the future. The will is, however, the form of a future tense, so note it here.

Imperatives are verb forms used to give orders in a direct way: "stop," "quit it," "give me that." Fancy versions of orders are not in imperative form and don't count here: "I wonder if you'd stop," "would you stop," and such. "Billy, stop," "please stop," and an emphatic "you stop it" do count.

Modals are may, might, can, could, should, would, and numerous other verbs. There is a big debate about which English verbs are modals; what modals are (auxiliaries or not); and what we do with them in English. One way to tell a modal is to see whether or not it can be used with another verb that you're sure is a modal. . . if it can, it isn't a modal (e.g., "I could might. . ." doesn't work, but "I could sing," "I could have a good time," "I might want. . ." are okay because "sing," "have," and "want" aren't modals. List "can" separately, (e.g., "I can do it.") and mark "will" under "Future".

Relative pronouns are "who," "which," "that," and children's uses of "what" to mean which or that. ("The one what I wanted.") Do not mark if these are used to form "wh-" questions (e.g., not "which one").

Interrogative word order means the marking of a question by means of a special order of words: "Is it a cat?"

Question word means a word like "when," "which," "where," "why," "how," etc. at the beginning of a sentence that helps to mark it as a question.

Note: In children's conversation, a sentence may begin with a wh-question word, yet lack special word order: "What she is doing?"

Prepositions are listed. Include others as well.

Temporals have to do with time: first, later, now, after, when, or anything else that tells about how things are temporally related.

Constructions. The following symbols are used in noting constructions:

N = noun

V = verb

Mod = modifier

Prep = preposition

Q = question word

Neg = negation

Two-Term Constructions

NN
- Mommy Santa Claus
- Superman bath

NV
- it burn
- dog sleep

Mod N
- big one
- my car
- that doggie
- two dogs

VN
- catch fish
- go home
- go bed
- need it
- go "rrrff"

Prep N
- on table
- under water
- at home

V Prep or Mod
- go down
- sit down
- bleed over

QN
- Where Mommy?
- What dat?

QV
- What doing?

Neg X
- bye-bye car
- not dada
- Steven all gone
- no more

Longer Constructions

Mod NV

This one standing
That one sit

Neg NV Prep

He don't sit down

Neg NV

I don't know

QNV

What he doing?

NVN

I see somebody

Examples of turns composed of more than one word, but limited to one-term utterances:

Oh, yeah. Oh, cute. Doggie, Doggie.
Oh, good. Up.
Yeah, you. You. You.
Two. Two.

Section 3. Pragmatic Function Codes

In coding this section, code only intelligible utterances, not turns. Utterances will have been marked on the transcript in the calculation of MLU. Every utterance is classified in two ways: according to "dialogue status" and according to pragmatic function.

In addition, utterances referring to past or future time and so marked are coded under "tense +." Most of these are, in practice, "comments" with the dialogue status of "other." If exceptions occur, note them. For example, if the child is prompted to give a tense-marked comment, record it under "comment" and "tense +" but note that it was also prompted.

Dialogue Status Codes

EIM: Elicited imitation of another's immediately preceding utterance. These follow statements like, "Say 'doggie,'" (What is it? Doggie) "Doggie."

SPIM: Spontaneous imitation of another's speech. The child imitates the other's immediately preceding utterance without having been asked explicitly to do so.

PROMPT: Prompted utterance. A response to an explicit prompt. Prompts include, "What's your name? John what?" "And you have a sister named. . .?" "The dog is going up, and the kitty is coming. . ." "Fruit that's called an or-. . ." Prompts call for one and only one specific response.

INAPP: Inappropriate or perseverative utterances. These utterances are not mere changes of topic or harping on the same topic. Rather, they involve no apparent effort to communicate and sound distinctly peculiar. Often, inappropriate utterances leave one with the feeling that the child meant something other than what his or her words conveyed. (E.g., a child who repeatedly says, "Mommy," yet who does not seem to use the word to refer to his mother.) Do not code ordinary shifts of topic here.

Code as "inappropriate" responses to questions that are not acceptable responses to those questions: (Where is it?) Yes. (What's his name?) No. (Is that his head?) Here (points to own head). But make a clear note on the form that utterances were inappropriate in this special way; they were not bizarre, odd, perseverative, etc.

OTHER: All utterances except the above.

Pragmatic Function Codes (Dale, 1979)

TENSE + : verbalizations marking tense. Comments on future or past actions.

NAME : verbal naming. Descriptive labels for the child's environment which are common nouns.

ATTRIB : verbal attributes. Descriptive labels for the child's environment that are perceivable attributes of objects or events - color, shape, location, movement, action.

COMNT : verbal comment. This requires going beyond immediately perceivable information to link with stored knowledge. Included are utterances that are words associated with a given object, event, or attribute of interest; possessives; or customary locations, as opposed to present locations.

RQPRES : verbal requests pertaining to present environment. Requests for present objects, for actions, other than giving an object, or for permission or approval.

RQABST : verbal request for an absent object.

RQINFO : verbal request for information.

NONEX : nonexistence verbalization. Negative expressing the absence or disappearance of an object.

REJECT : verbal rejection. Negative expressing the rejection of an object or action.

DENIAL : verbal denial. Negative expressing the denial of a proposition.

AFFIRM : verbal affirmation. Response expressing affirmation or confirmation of a proposition.

ATTN : attention-seeking verbalization.

GREET : greetings and other ritualized forms.

ROUTINE : verbal routines, songs, alphabet recitations.

DEMONSTRATIVE : this, that, these, those.

EXCLAMATION : oh, wow, gee.

UNIN : uncodeable or uninterpretable.

Examples of Pragmatic Function Codes

TENSE :
Someday . . .
Maybe Tommy come. (=will come)
I do one for her. (= I will)
Had turn.
Me get a new one. (=I obtained)

NAME :
(What will they have for dinner?) toast
"A," "B," other isolated alphabet letters
(code recitation of sequences as "Routine")
(What's your name?) John
(Did you pour something?) milk
(Who cooks your eggs?) Mommy
(What's that?) sand
(He's a pilot.) pilot
(It's called an or. . .) ange
(Is there something special you use?) stickers

ATTRIB :
(The kitty is coming. . .) down
(Tell me what he is doing.) brush his teeth
eat supper
washing his face
getting ready for bed
Mommy making supper.
(What do they do upstairs?) watch TV
(Where is the kitty going?) up mountain
(What color?) red
(Where's the boat?) there

COMNT :
I don't know
(Which brother?) big one (= older)
(What's her name? I forget) me forget too
Me want this bed (= I like it)
(Do you like this?) a little
bow-wow, rrrr (lion says), wheee. . .
(One for you and one for. . .) Allison
(Who's this for?) for Allison
Me had turn (+ "tense")
Maybe Tommy come (+ "tense")
(Where do you go in the morning?) to school
(Is he your big brother or your little one?) big
Me forget too
(Where is your TV?) downstairs
Me get a new one

(Do you have turns painting?) and my mommy
Hate grapefruit
I take seed out
Crack it over
Same as me
Her mommy
(Whose name am I writing?) me; my name
I do one for her

RQPRES : I want this (a request for material)
See them (= let me. . .)

RQINFO : Huh? Where? What?

DENIAL : (Do you have one of those?) No
(Have you seen this before?) No
(You like those, don't you?) No
(Do you paint at school?) Not at home

AFFIRM : (. . ., right?) right
yeah
oh
(Will he come?) Yes
(You eat breakfast, right?) breakfast
(here, repetition of key word is used to affirm)
um-hm or mmm (to affirm)

ATTN : Hey (term of address)
Look, lookit

GREET : Hi
Bye-bye

ROUTINE : (sings song)
(recites alphabet sequence)

DEMONSTRATIVE : This one
That one (used to point out)
These
Those
[Do not code requests in this category.]
(Which ones do you know?) this, this, this

EXCLAMATION : Wow

UNIN : (Why?) 'cause

Semantics and Syntax
Summary Sheet

Nouns
people
proper names
animals
food
clothing
body parts
TV, story character
vehicle
other

Yes,No

yes,yeah,no,ok,right

Attributes
big
little
tall
short
pretty
fat

Color*

Number*

routine

Expressives
oh
oh-oh
wow

Action Verbs*

Status verbs

know
like
need
have
be

Quantifiers
any
both
some
lots of
a few
all

Proforms, deixis

it
this
that
there
here
this one
that one

* The coder lists words in this category that appear in the speech sample.

Subject______________________________ Date____________________

Context______________________________ School__________________________

TURNS

Totally intelligible____________________

Partially intelligible____________________

Unintelligible________________________

Other__________________

Total__________________

WORDS

Intelligible words in partially intelligible turns______________________

Partially intelligible in partially intelligible turns__________________

In totally intelligible turns___________________________

Total Words____________________

Number of totally intelligible 1-word turns___________

2-word turns___________

3-word turns___________

greater_______________

Intelligible turns "yes" or "no" ____________________

Words in longest totally intelligible turns ___________

Mean length 5 longest totally intelligible turns ____________

Repeated turns________________

Mean length intelligible turns________________

Mean length intelligible turns without yes-no turns __________________

MLU = ——— =

Temporals

when
now
first
then
after

Two-term constructions

NN
NV
Mod N
Prep N
V Prep
V Mod
Q V
Neg X

Others: (other 2-term, longer)

Locatives

in
on
under
over
in front
next to
in back
beside
between
up
down

Recurrence
more
another
again
too

Attentional device
hey

Pronouns

I
me
mine
my
you
your
yours
he
him
his
she
her
hers
we
us
our
ours
they
them
theirs
it
its

Nonexistence
no
all gone
no more
away
bye-bye

Modulations

regular plural
irregular plural
indefinite article
definite article
demonstrative article
comparatives
reflexives
present progressive
past regular
past irregular
auxiliary have, be
negation
third person - s
future will
imperative
modal
relative pronoun
interrogative word order
question word

PRAGMATIC FUNCTION CODES

Subject ______________________ Date ______________

Context ____

Pragmatic Function	DIALOGUE STATUS TERSE +	RIM	SPIM	Prompt	Inapp	Other	
NAME							
Attrib							
Commt							
RQpres							
RQabst							
Rqinfo							
NoneX							
Reject							
Denial							
Affirm							
Attn							
Greet							
Routine							
Explan							
Unin							
Demo							

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APPENDIX G

PRACTITIONER MATERIALS

A Communicative Approach to Early Childhood Language Training

Workshops 1981-1982

Susan Conant and Cathleen Cuneo

Recommended Refresher Readings

Brown, R. A first language. Cambridge, Massachusetts: Harvard University Press, 1973.

Cazden, C. Child language and education. New York: Holt, Rinehart, and Winston (current edition).

Clark, H. & Clark, E. Psychology and language. New York: Harcourt Brace Jovanovich, 1977. (A basic text on psycholinguistics with a heavy emphasis on pragmatics. Highly recommended.)

deVilliers, J. & deVilliers, P. Language acquisition. Cambridge, Massachusetts: Harvard University Press, 1978.

NEW GAMES AND VARIATIONS

Name______________________________ School__________________________

Suggested title of game, if any____________________________________

Game format or similar game in manual, if any_____________________

____

Materials____

____

____

(If you are using a commercially available material, please list title and manufacturer, if known.)

Players____

____

Prerequisite skills (optional)____________________________________

____

____

How to play:

Comments, notes, variations: Please use reverse side to comment on the game and the content it can be used to teach.

Observation of the Use of Games

Date______________________ Observor________________________________

Teacher_________________________ School_____________________________

Game(s) observed____

format(s)____

arrangement(s) of players_______________________________________

Was the game used in accord with the program's intention?

reciprocal roles

communicative need

need for information

"use words"

requests for clarification as needed

appropriate rewards

models of responses

redundancy

informal chat

happy atmosphere

Discrepancies between the intention of the program and its use:

arbitrary demands

arbitrary rewards

nonreciprocal roles

known information questions

other

Note comments on reverse, including any innovations observed in the use of the games.

APPENDIX H

PARENTS' GUIDE TO COMMUNICATION GAMES

riep

RESEARCH INSTITUTE FOR EDUCATIONAL PROBLEMS, INC.

29 WARE STREET • CAMBRIDGE, MASSACHUSETTS 02138 • TELEPHONE (617) 868-0360-2

A PARENT'S GUIDE TO MAKING AND PLAYING COMMUNICATION GAMES

In this paper, I will describe some games that you can make and play with your child. In all of the games, the basic point is communication: One person talks, the other listens and does something to show that he understands. First, your child listens while you describe something. He or she then does something to show his or her understanding of what you said. Finally, you both check to make sure that what the child did corresponds with what you said. Later, you listen while your child has a turn to be the speaker. In these games, no one wins or loses. The point is just to keep playing.

In all of the games, there is only one important rule: Use words. You will need to remind your child of this rule by saying, "Tell me about it. Don't show me," or "Remember? No pointing."

A Game to Teach Single Words: An Example

Young children often use a single word to mean crackers, cookies, and other similar foods. "Cracker" may mean, for the child, Saltines, Oreos, oyster crackers, and all other snack foods as well. Suppose you would like to help your child learn to ask for these by name, to say, "cookie" for a cookie, but "cracker" for a cracker.

You will need the following materials: Two identical plates, two identical crackers (e.g., Saltines), two identical cookies, (e.g., two Oreos), and a manila folder, large book, or other object that will stand upright. Give your child one cookie, one cracker, and a plate, and take the other cookie, cracker, and plate yourself. Put the folder, book, or other object upright between you and your child, so that you cannot see the plate and food your child has, and so that your child cannot see yours.

The point of this game is to have your plate and your child's look alike. If one of you has a cracker on the plate, the other should have a cracker on the plate. First, it's your turn. Tell your child to put the cracker on the plate. (e.g., "Put the cracker on your plate. I have a cracker on my plate, so you put a cracker on your plate. Not the cookie, the cracker.") When your child has put something on his or her plate, or when you sense that the child is ready, remove the folder or book so that you and your child can see both plates. Now, compare them. If your child has done what you asked, talk about the similarity ("Yes. I have a cracker on my plate, and you have a cracker on your plate."). If your child has not followed your instructions, point out the differences. ("Whoops, I have a cracker. Remember, I told you cracker. I have a cracker, but you have a cookie."). Just try to describe the difference. Don't become involved in blaming the child for not understanding.

Then, give your child a turn to be the person who talks. Explain to your child that he or she should put a cracker or a cookie on the plate. You will probably need to hold the folder in place and to remind your child to tell you, not show you what his or her plate looks like. (Don't be surprised if your child tries to hold up a cookie and show you.) As soon as your child says something that tells you what to do, follow his or her instructions. Even if you know that the child has put a cracker on the plate, if he or she says, "Cookie," put your cookie on your plate. Then, remove the folder and compare the two plates. If your child explained clearly what to do, talk about that. ("You said cookie, so I put the cookie on the plate. Now, they're both the same."). If your child named the wrong food, just describe what went wrong. ("You said cracker. If you mean cookie, tell me cookie.") When it is your child's turn to talk, ask him or her to clarify meaning (i.e., "What?") if you cannot understand what your are supposed to do. For instance, if your child talks too softly, explain that you can't hear and he or she needs to talk louder. If your child finds a way to tell you what to do without using the particular words you had in mind, that is fine. For example, if your child says "Oreo" instead of "cookie," you can tell what's meant, so don't correct him.

Using the New Words. In this game, you have created a situation in which your child has some reason to use the words cracker and cookie. In everyday life, there are many reasons for the child to use these words as well. For example, when it is time for your child to have a snack, you can ask whether he or she wants crackers or cookies. When you are shopping, ask what to buy. Ask your child to guess which one you want.

Similar Games: Two Word Variations

In the example about crackers and cookies, your child can respond adequately by using only one word, "cracker," or "cookie." A more difficult game can be make by adding something else to put the food on. Besides the cookies, crackers, and plates, you will need something new to put food on, for instance, napkins. In order to describe how your materials are arranged, you now need to specify which food and which location: The cracker is on the plate, the cracker is on the napkin, the cookie is on the plate, or the cookie is on the napkin. In this game, two words are needed, one for the food, and one for its location. When your child first begins to play a game like this, he or she will probably not use the two words that are needed. For instance, your child may say, "cookie," but not tell you where the cookie is. In this case, ask. ("OK. I have the cookie, but where do I put it? On the plate or on the napkin?").

Other games can be make that work the same way as this one. For example, you can buy two sets of inexpensive toys (two toy cats, two toy dogs, two toy cars). Make sure that the two sets are exactly alike. For instance, don't buy one brown cat and one white cat. Differences like that seem more important to children than to us.

Give your child one set of the toys, and use the other set yourself. Place the folder or other object between you and your child. Suppose that you have a toy cat, a toy dog, and a toy car. You might make the dog ride in the car, the dog push the car, the cat ride in the car, or the cat push the car. Arrange your toys, then describe the arrangement to your child so that he or she can duplicate it. Remove the folder so that you both see both sets of toys.

Hiding Games

In the kinds of games I have described so far, you need two identical sets of materials. Sometimes it is difficult or expensive to have two sets. For instance, family pictures can be used in games, but it is unlikely that you have two identical sets of the pictures. When this happens, you can play a hiding game in this way:

Choose a group of pictures, starting with two or three. Have your child close his or her eyes. While the child's eyes are closed, hide a small object under one of the pictures. A penny, a poker chip, or a small piece of paper will do. Tell the child that you're ready. Have him or her guess where the object is hidden by describing the picture you should look under. Remember, the child must use words. You might remind your child, "Pointing doesn't count." When you can tell which picture your child means, lift it up. Continue until the hidden object is found. You can now give your child a chance to hide the object while you guess where it is.

Children like to play this kind of hiding game with pictures of themselves. For instance, you might choose a picture of your child riding a bike, another of your child on a swing, and another of your child at his or her Grandmother's house. In that case, the child can tell you which picture he or she means by saying, "bike," "swing," or "Grandma." If you want the child to use two words, you'll need to find sets of pictures that require two words. For instance, you may have a picture of you at the Grandmother's house, your child at the Grandmother's, you at the beach, and your child at the beach. In that case, the speaker in the game needs to tell the listener which person is meant and which location.

This kind of hiding game can also be played with objects. For instance, suppose you want to help your child to name colors. (Disposable plastic cups come in a variety of colors. Sets of mugs sometimes are available in different colors. The tops of shaving cream cans differ in color.). Find one small, interesting object that will fit under the cups, and have your child guess where the object is by naming the color.

In these hiding games, it is generally a good idea to begin playing with only a few objects: two pictures, two colors, or whatever. Don't bewilder the child by trying to teach ten new colors at once. It is also a good idea to begin by including something that the child already knows. For instance, if your child understands and uses "red," you might start out with red and one other color. Try to choose another color very different from the first--red and blue, but not red and orange.

Taking Photographs. If you have a camera, many games can be made by using photographs. Making games from pictures you've taken yourself is particularly helpful if you want to teach your child to use two, three, or more words at a time.

For example, you can create the materials for a hiding game that requires two-word utterances by photographing your child riding a bike, swinging on a swing, and eating ice cream, and photographing his or her brother doing the same things. In the hiding game with these pictures, your child needs to say which person is doing what.

Games can also be made by using a set of toys and photographs of those toys. For instance, if your child has a favorite toy animal, you might photograph the toy in different places in your house. You can then play the following game: You hold the pictures. Describe one picture to your child. (e.g.,"Teddy is under the couch.") Your child's task is to put the toy where you've said. When the child puts the toy somewhere, compare the picture you described with the place the child put the toy. ("Yes. Here Teddy is under the couch, just like in the picture.") When the child has understood your words correctly, he can actually see that he understood by comparing the picture and the toy's present location. As in the other games, your child should also have a chance to hold the pictures and to tell you where to put the toy. In games like this one, you will need to remind your child to use words. Most children try to play a game like this by showing the pictures rather than by talking about them. Just remind the child not to show the picture but to talk about it. Children understand readily that it spoils the game if they show the picture.

Using "Real" Games.

A number of commercially available games can be used as communication games if you add the basic rule of using words, not showing pictures. For instance, there are many "Lotto" games for preschoolers. "Lotto" games can be used in the normal way: They work exactly like Bingo or Beano. The only difference is that the caller or dealer must describe the card and not show it to the other players. Instead of showing a picture of a dog, the dealer deliberately does not show it, but says, "Who has the dog?" Some children may enjoy playing these Lotto games to win, that is, playing to see who can fill up a card first.

What Should the Games Be About?

No one knows better than you do what would be good games for your child. You know what interests your child, what is important to your child, what your child would like to talk about. If your child loves superhereos, make games about superheroes. If your child has trouble telling you what he or she would like for breakfast, make a game about breakfast foods. If your child has trouble telling you about things that happened at school, take pictures of the schoolroom that will help him or her to name school activities.

Hints for Playing

Don't expect perfection. When preschool children begin to play games like these, they almost always tell you less than you need to know. If you need to know whether the child means a white horse or a brown horse, the child will often just say, "Horse." That's perfectly normal. Just ask, "Which horse? The brown horse or the white horse?"

When you describe a picture, you may say something like, "The brown horse is riding in the truck." Your child may describe the same picture briefly as, "Brown horse in truck." If you can tell what the child means, that's fine. On the other hand, if you cannot tell, ask ("Which horse? Doing what?").

Don't be surprised if your child "peeks." When preschoolers are told to cover their eyes or close their eyes during a hiding game, they often peek. If your child has not yet begun to tell you when you can look, you may need to peek as well. So long as your child continues to play and describes the pictures or toys with words, don't worry about minor violations of rules.

Be flexible. If your child likes to be the listener or the talker in a game, you don't need to take turns all the time. If your child has a preference for a particular game, use that game. If a game seems simply too difficult for your child, try to make it easier or don't use it. If your child becomes bored or restless, stop.

Be talkative. Although your child may describe a picture using only the one or two necessary words, you don't need to do so. In fact, when you talk to your child, feel free to use several different descriptions of the same picture: "The cookie is on the plate, not the cracker. The cookie. I have my cookie on my plate. Now put your cookie on your plate." You can also talk about the games and about taking turns: "Now it's your turn to tell me what to do. I had my turn, now its your turn."

Don't ask for repetitions. When we want children to say new words or sentences, it's natural to try asking them to repeat us: "Cat. Say 'cat'". Sometimes this works, but often it does not help the child to use the new word in a meaningful way. It does not do a child any good to pronounce "cat" unless he or she can use the work to mean cat. In these games, the children have the opportunity to use words to ask for things, to tell us what to do, and so forth. The point of the games is to communicate meaning, not to say words. For this reason, try to avoid asking the children to repeat after you.

Pay attention to meaning. Sometimes you may have in mind a word, phrase, or sentence that you would like your child to say. In putting together game materials, you may intend to teach the child to say some particular thing. When you show the materials to your child, you may find that your child prefers an entirely different way of describing the picture or object you're using. For example, you may want your child to say "at the beach," but he may describe a picture of someone at the beach as "water." In these games, your child is right. If "water" works as a way to identify what he means, that's fine. If you want him to say "beach," you need to make a new game where "beach" conveys meaning, but "water" doesn't work. (e.g., a hiding game with a picture of a beach and another picture of a glass of water).

Along similar lines, don't try to insist that your child use full, grammatically correct sentences if they aren't necessary to get meaning across. For instance, if you and your child are playing with pictures of a cat and a dog, don't try to make the child say, "This is a cat" or "This is a dog" instead of "Cat" or "Dog." If you cannot understand the child's word at all, or if he uses "cat" to refer to a dog, let him know that he is not communicating. On the other hand, if his meaning is clear, don't worry about the grammar.

Susan Conant, Ed.D.

APPENDIX I

EXPLORATORY DATA ANALYSES

VERY ODD FAMILIES

In the course of conducting this project, staff observed among the families of subjects a small number whom even a naive observer would call "very odd." These families were not simply sociologically different from others or mildly eccentric. Rather, they were outstandingly deviant or bizarre in their behavior; "very odd" is an apt description. Because these families stood out from the others in a way that we felt might have some significance, the information about whether or not a child came from such a family was coded. Our purposes in describing this group are, first, to document their occurrence in this population; second, to explore the data for any potential impact of these families on the initial language behavior of the children; and third, to raise the general issue of the appropriateness of intervention aimed at individual children rather than at the communicative contexts in which they live, an issue highlighted by these extreme cases.

Background Characteristics

Of the 48 subjects on whom data were available, seven were coded as coming from very odd families. Did these children stand out from the others in any way? In many ways, they did not. Two of the children were girls and five were boys, almost exactly the same proportion of girls and boys found in the subjects from other families. No strong or even moderate associations appeared between the "very odd family" variable and many other variables reflecting child characteristics: articulation disorders, a tendency to babble, a reliance on pointing and tugging as a means of communication, loud or assertive behavior, shyness, or various other child characteristics. The children from very odd families, however, were strikingly freer of organic problems than were the other children. The very odd familes contained three children (43%) diagnosed only as "language handicapped" without concomitant diagnoses; only 15% of the remaining children were so diagnosed. Of the seven children, one showed some autistic-like features, and two had a history of physical abuse or neglect (not sexual abuse). The seventh child, discussed elsewhere, was coded as "serious disorder evident but records nonexistent, unavailable, or incomplete." Observers of this child had a sense that some organic problem was probably partly responsible for the child's difficuly, but her parents refused to release her records to the school. In contrast, the other group contained ten children with Down's syndrome, as well as children with spina bifida, seizure disorders, known brain injury, and numerous other organic problems.

Another characteristic of the children from very odd families was a tendency toward moderate cognitive delay. While 17% of the other children showed no evident cognitive delay, 29% moderate delay, and 54% serious delay, six of the seven children from very odd families were coded in the moderate category and one in the serious category. The only suggestion of a social-behavioral difference between the two groups of children was evident with regard to isolated behavior. While 63% of the children from other families were children who often played alone, did not sit with other children, or otherwise were isolated, only two of the seven children from very odd families (29%) were isolated in this way.

Demographic characteristics of the families of these two groups of children revealed some differences. Only one of the very odd families was a professional or white collar family, as opposed to 27% of the other families. This one case, however, showed that "oddity" is not an exclusively working class or lower class phenomenon. With regard to family composition, the proportion of very odd families containing both parents was almost identical to the proportion of other families. Five very odd families contained both parents, while two consisted of adults other than parents (i.e., grandparents).

Linguistic Characteristics

Discriminant analysis is a technique that forces groups to be "as statistically distinct as possible" by weighting and linearly combining variables (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975, p. 435). In order to locate potential differences in language behavior between the children from odd families and the other children, discriminant analysis was used, with language measures from the first observation of the child serving as the discriminating variables. In these analyses, stepwise discriminant analysis was used, with Rao's V as the criterion for eliminating variables.

One analysis was performed in which only the four composite variables discussed at length elsewhere in this report were used as discriminating variables. None of the four composites qualified for analysis; that is, the scores on the four composites did not provide a way to differentiate between the groups.

In a second analysis, selected simple variables were used, drawn from all three parts of the coding system: the total number of words; the number of words in the longest intelligible turns; the mean length of the five longest intelligible turns; the mean length of intelligible turns other than those consisting exclusively of yes or no or an equivalent; the number of repeated turns; the number of different action verbs; the number of times an action verb was used; the number of differrent status verbs; the number of times a status verb was used; the number of categories of modulating devices; the number of times each separate category of speech act was used; and the number of inappropriate utterances. After five steps, five of these variables remained in the analysis: the length of the longest intelligible turn, the mean length of the five longest intelligible turns, the number of utterances in the Attribute category, the number of utterances in the Request Information category, and the number of utterances in the Miscellaneous category. These five variables, however, produced only a small degree of separation, as shown in the final Wilks' lambda (0.8284716, n.s.) and a canonical correlation of only 0.4141599.

In a third analysis, those remaining in the second analysis plus several suggested by other preliminary analyses were used: the longest intelligible turn in words, the mean length of the five longest intelligible turns, the number of utterances in the Attribute category, the number of utterances in the Request Information category, the number of utterances in the Miscellaneous category, the number of "Other" conversational turns (consisting of noises, laughter, sounds), the number of one-word turns, and the number of two-word turns. After five steps, five variables remained: the number of utterances in the Attribute category and in the Request Information category, and the number of "Other" turns, one-word turns, and two-word turns. A moderate degree of separation was indicated by Wilks' lambda (0.7570894, Chi-Square with 5 d.f. = 12.105, $p<.05$) and a canonical correlation of 0.4928596. The standardized discriminant function coefficients from this analysis appear in Table I-1.

As a check on the adequacy of the discriminant function, the original classification of cases as coming from or not coming from very odd families was compared with the classification predicted by the discriminant function. For this analysis, 77.08% of the cases were correctly classified using the discriminant function. Eight of the 41 children not from odd families were incorrectly classified, and 3 of the children from odd families were incorrectly classified.

Table I-1

Standardized Discriminant Function Coefficients: Children From "Very Odd" and Other Families

Discriminating Variable	Coefficient
Number of utterances in Attribute category	0.48999
Number of utterances in Request Information category	0.56946
Number of "Other" Turns (noises, sounds)	0.50800
Number of One-Word Turns	0.81242
Number of Two-Word Turns	-1.05946

Discussion: Linguistic Data

What suggestions emerge from this exploration? First, no gross differences in language performance differentiate between the children from odd families and other families. Second, the data do not support what might seem to be an obvious hypothesis: that the odd families, notable for their inappropriate behavior, have children distinguished by inappropriate speech. Third, the linguistic picture of the children from odd families is one of children relying heavily on brief conversational turns consisting of one word or a nonverbal contribution, and a tendency to use language to request information and to make attributive statements.

Of these results, the one that strikes a clinical chord is the one concerning the use of utterances to request information. It is tempting to interpret this finding as a sign of the children's highly functional linguistic response to the families. Indeed, these are families that inspire in adults the impulse to ask for further information and clarification. While highly tentative, this suggestion probably should not be entirely dismissed, as the following excerpt from a transcript of one of these children shows. The child and an adult are playing with toys, including a toy plane:

Child	Adult
Boat.	
	A boat, you think that's a boat. OK, you put it in. If you want to think that's a boat, that's OK.
Plane?	

This child's request for information ("Plane?") is interesting because it suggests that she has been able to interpret accurately the highly indirect utterances in the adult's preceding conversational turn. The explicit affective quality of the adult's turn is very positive; she indicates that she is happy to accept the child's (incorrect) label. She does not say outright that the toy is a plane, not a boat. She does not prompt for the word plane directly, nor does she use the common adult ploy of saying, "Is it really a boat?" Rather, she marks her utterances with highly complex pragmatic features ("you think..." "If you want to think...") that say without saying: It's not a boat, you're wrong, but I'm willing to be pleasantly condescending in playing along with your misunderstanding. Despite this complicated pragmatic marking and the positive affective quality, the child obviously gets the point.

The data suggest, then, that these children of odd families may have had a good deal of practice in responding to statements about which the children need or want additional information. The example suggests that these children may, indeed, be rather skilled at decoding highly indirect adult talk. Clearly, however, our data, while interesting, simply suggest this possibility.

Clinical Impressions

The very odd families showed difficulties in their dealings with schools. For example, a 4-year-old girl in one family was of great concern to her teachers not only because of her cognitive and linguistic delay, noncommunicative behavior, and failure to progress, but also because of a physical appearance that suggested some genetic syndrome of mental retardation or other serious organic problem. Her parents, who were extremely peculiar in dress and manner, refused to have her records released to the school and announced proudly that they had torn up, unopened, all clinical reports on the child because: "We only allow happy thoughts to enter our home." These parents had repeated difficulty in dealing with schools and moved the child from school to school, evidently in search of a school that might give them only happy news.

In another case, a 4-year-old girl was referred to the project staff by her teachers because their efforts to help her to talk had failed for two years. The child showed excellent receptive language skills but spoke almost never. On the rare occasions when she spoke, she was barely audible. The child's records showed no organic problems, and there was nothing about her appearance or behavior that suggested any. In consultations with her teacher, it became clear that she was not the only person in her family with a similar problem: Her older brother exhibited similar but less marked behavior, and, most strikingly, her mother spoke very rarely and very softly. The teacher reported that the difficulty in eliciting speech from the little girl was mirrored in the difficulty in eliciting speech from her mother. The father was the only dependable source of expressive language in the family. He appeared to talk for everyone, at least in transactions between the family and the outside world.

Discussion. The most striking finding in the data concerning the children of "odd families" is the low incidence of organicity in these children compared to the others. It is clear that odd families do not necessarily produce children with language-related disabilities; indeed, it is even possible that such families produce asymptomatic children. In the families discussed here, however, it seems probable that peculiarities in family communication patterns were conducive to the maintenance, if not to the initial development of the children's communicative disabilities.

Both of the cases described above suggest that the families had obvious problems related to boundaries, sets of rules that regulate the flow of information among two or more family subsystems or between the family and other systems. The first family's statement that only happy thoughts enter the home makes explicit the existence of a maladaptively rigid boundary between the family and other systems concerned with the child. The second family's boundary is evident in behavior; the routine occurence of the pattern that only the father talks to the school creates a rigid boundary between the family and the school.

For these cases, it seems misleading to identify the child as the locus of the communicative disability; the child's language disability is one manifestation of a systemic problem. Using this redefinition of the problem, the logical point of intervention would appear to be the family rather than the child alone.

These cases, then, suggest an area for research and intervention. With regard to research, the question that then arises concerns the observable communication patterns in families like these. What is the nature of communication among family members? Does the child's language disability actually seem to be symptomatic of problems in his or her particular family? What function, if any, does the child's language disability serve for the family system as a whole? With regard to intervention, these cases suggest that in some instances, intervention shoud not be limited to educational efforts directed at the individual child. Rather, psychotherapeutic intervention involving the family would seem to be appropriate, since educational efforts aimed at the child alone are, in effect, efforts that place on the child the burden for changing the family as a whole.

REPEATED MEASURES ANALYSIS

Data on the same children before and after both training and no training intervals were available for only two small subsets of children: (a) four children untrained for four months, then trained for four months and (b) five children trained for four months, untrained for four months, then trained for two four-month intervals. Because of these very small sample sizes, the use of parametric statistical procedures for these data is problematical. In the results presented here, the statistical procedures are used for what Hays (1973) describes as their succinct data-packaging function rather than for the usual inferential purposes.

For both Set A and B data, a multivariate analysis was conducted with dependable variables consisting of scores on the four composite variables at the different time points (occasions) and with subject and occasion serving as independent variables (see Winer, 1971). In both cases, the focus of interest was on contrasts between the occasions. These contrasts, it should be noted, use overlapping pieces of information (i.e., the "pretest" for one interval is the "posttest" for the previous one) and hence are nonorthogonal. Consequently, the order of entering the constrasts into analyses affects results.

Set A Results

Examination of the Set A data for the three occasions (one before a four-month no-training phase, the second after that phase and before a training phase, and the third after the training phase) showed a clear interpretational problem. Namely, scores on the four composites moved upward from the first to the second and from the second to the third occasion. When either contrast was entered first into the analysis, it was statistically significant ($\underline{p} < .05$). In short, the children improved during both intervals, and there was no evidence of a treatment effect.

Set B Results

The Set B data came from five children on five occasions: (1) before a training phase, (2) after the training and before a no training phase, (3) after that interval and before the second training phase, (4) after the second training phase and before the third, and (5) after the third training phase. As for Set A, all contrasts between occasions were statistically significant ($\underline{p} < .05$) when entered into the analysis before the other contrasts between occasions. Again, the generally upward trend of scores was no more or less marked after the training phases than after the no training phase.

For the Set B data, of course, a major interpretational problem arises, namely, the problem of whether the observations following the no training interval represent (a) a long term treatment effect or (b) a true no-treatment effect.

Conclusions

It is clear that these data provide no real evidence concerning the impact of the program. In future research, repeated measures on subjects would be most useful if gathered very frequently (e.g., daily) in the context of single-subject research, with stable baselines established before the onset of training.